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November/December 1990

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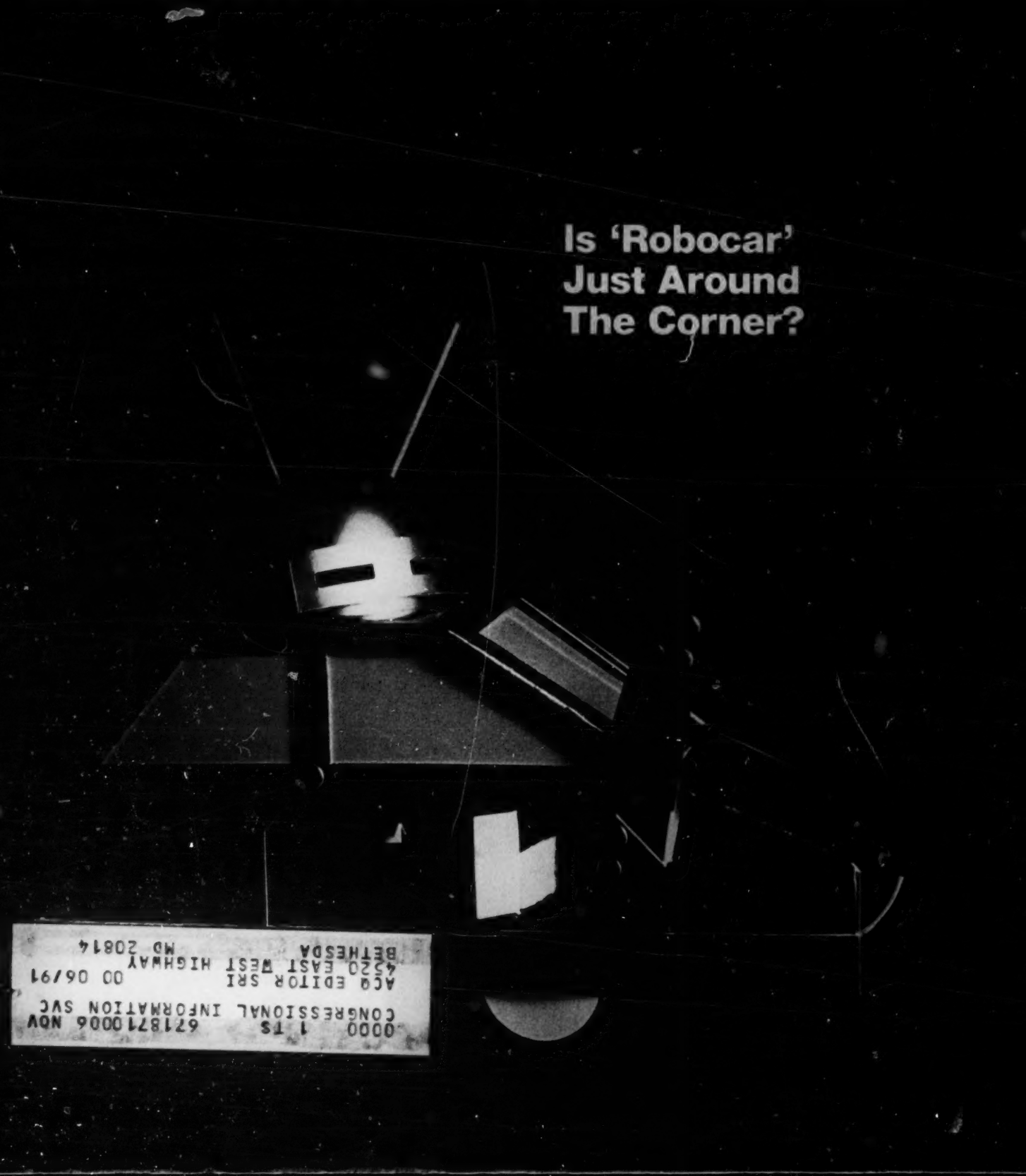
Is 'Robocar' Just Around The Corner?



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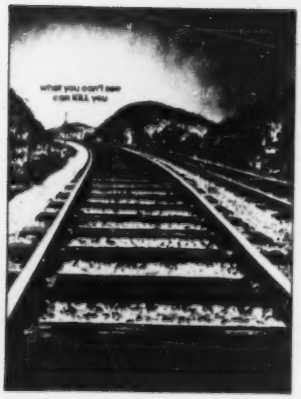

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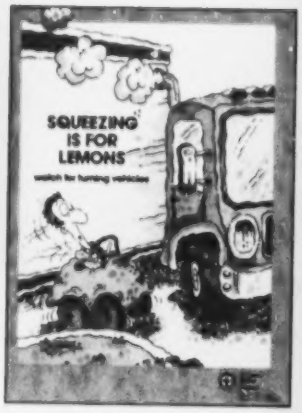

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November/December 1990

National Safety Council

TRAFFIC SAFETY

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School Bus Drivers Get Muscle

A new Iowa law enabling school bus drivers to report motorists who illegally pass their stopped vehicles has resulted in a five-fold increase in the number of citations issued for the offense, according to a study by the Iowa Department of Transportation. In 1989, 1,675 Iowa drivers were cited for passing stopped school buses, compared to 321 in 1987.

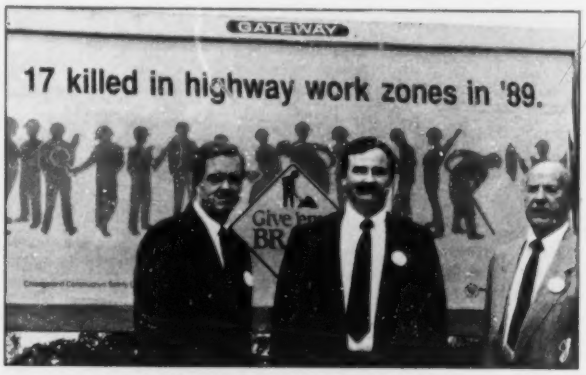
The law allows bus drivers to turn over the license number and description of a violator's vehicle to law enforcement officers, who track it down and issue a citation.

The Iowa law requires motorists to reduce their speed to no more than 20 mph when approaching a school bus that has its amber warning lights flashing, and to stop completely when the school bus stops and has its stop arm extended. The driver's vehicle must stop no closer than 15 feet from the bus and remain stopped until the stop arm is retracted.

Drivers are not allowed to pass a school bus moving in the same direction if its amber or red warning lights are flashing. However, a driver going in the opposite direction to the school bus can pass the bus on a road with at least two traffic lanes in each direction. Drivers are not required to stop even if the bus is stationary.

Contractors Fund Safety Campaign

The Illinois Department of Transportation's (IDOT) "Give 'Em A Brake" safety program, designed to persuade motorists to slow down when driving through highway construction zones, is getting support from a group of Chicago area contractors.



The Chicagoland Construction Safety Council is financing a billboard campaign for the program. The group has erected 150 billboards within the six-county metropolitan Chicago area. The unique sign has a background of faded gray silhouettes representing people killed in highway construction and repair zones with a message across the top indicating the exact number of these deaths that occurred within the last year. The Illinois "Give 'Em A Brake, Slow Down" safety message is printed across the middle of the billboard.

Another group of Illinois contractors, the Associated General Contractors of Illinois, is helping IDOT bring the billboard campaign to other areas of the state. In addition, participating companies are donating extra billboards to help get the safety message out.

Crack Down on Safety Belt Use

A Texas program that offers offenders the choice of attending a two-hour class instead of paying a $50 fine has resulted in increased enforcement of the state's mandatory safety belt use law (MUL). The program was developed by the police department of Arlington, Tex. in cooperation with the Arlington municipal court system.

The $10 class, which violators are allowed to attend for only one safety-belt citation, is offered four nights a week and Saturday. Once the option has been chosen, failure to attend class results in issuance of a bench warrant.

A follow-up study conducted by the Texas Transportation Institute, Human Factors Division, Texas A&M University, six months after the program was in effect found the following:

- Nearly half of those issued citations chose to take the class.
- There was a significant increase in the number of class participants who said they always or almost always wore a safety belt.
- Offenders who attended the class were less likely to have previously been involved in crashes than those who chose not to attend class.
- Of those who attended class, 3.9 percent received another MUL citation during a 13-month tracking period, while 8.5 percent of violators who did not attend class were cited again within the same period.
- There was a four-fold increase in the number of MUL citations issued by the Arlington police department after the project began.

Pedestrian Safety Rewarded

Safety education and enforcement programs pay off for communities who take pedestrian safety seriously, according to the American Automobile Association's Pedestrian Protection Program. The program is designed to encour-

age communities to teach pedestrian safety and to strictly enforce related laws.

Four locations—a state, a county, and two cities—were recently found to be the safest places in the United States to cross a street. The winners of the AAA's 51st annual Pedestrian Protection Program's Grand Awards were the state of Wisconsin; Henrico County, Virginia; and two California cities, San Jose and Rocklin. The award was the fourth for both Wisconsin and San Jose.

The 2,454 cities that participated in the safety contest were grouped by population and evaluated on their safety programs, enforcement levels, traffic engineering and pedestrian death and injury rates.

Each winner had developed an organized effort to teach children, adults and senior citizens the dangers they face as pedestrians, according to AAA. In addition, winners had active enforcement programs. For example, San Jose police issued 355 tickets to pedestrians who crossed against traffic signals in 1989.

Tips for Older Drivers

A multi-media exhibit designed to show older adults how driving can be made more safe and comfortable will travel across the United States from now through 1991.

Older adults can learn how to help compensate for changes in vision, flexibility and reaction time through occupant-protection systems, such as air bags, shown at the exhibit. Demonstrations also will show how to select cars and properly use safety features.

The exhibit was designed by the ITT Hartford Insurance Group to encourage older drivers to buy and use safety features in their cars.

Students Should Buckle Up

Laws that require the installation and use of safety belts in school buses would improve overall safety for students, according to a study by the New Jersey Institute of Technology's (NJIT) Center for Transportation Studies and Research.

The study was designed to determine the effectiveness of the use of lap safety belts in all Type I and Type II school buses, and whether belts should be required. The researchers combined the results of a variety of studies in making the following recommendations:

- Safety-belt use should be mandated for all occupants of school buses, including students, monitors, drivers, teachers and parents.
- Use of safety belts on school buses should be strictly enforced.
- Safety belts should be introduced into a state's school-bus fleet as the fleet is renewed because of the difficulty in installing safety belts in existing vehicles.
- If continuing research finds that rear-facing students are safer than conventional forward-facing seats, they should be required for school buses.
- Mechanical gates, electronic sensors, video monitors, stop arms on the sides of buses and better driver training are measures that should be taken to reduce injuries and fatalities.

The study was performed for the New Jersey Department of Law and Public Safety, Office of Highway Traffic Safety, and funded by the Senate Law, Public Safety and Defense Committee of the New Jersey Legislature.

SHORTCUTS

Busting Fuzz Busters

The Federal Highway Administration (FHWA) will soon ask for public comments on a proposal to ban radar detectors — "fuzz busters" — in commercial vehicles. The agency responded to a request for the rulemaking from eight major organizations.

"A ban on radar detectors is needed to improve the compliance of commercial vehicle drivers with speed limits and to reduce the number and severity of crashes," the organizations said in a letter to FHWA administrator Thomas Larson.

Signers were the National Safety Council, Advocates for Highway and Auto Safety, the Insurance Institute for Highway Safety, the American Automobile Association, American Trucking Associations, the International Association of Police Chiefs, the National Association of Governors' Highway Safety Representatives, and Public Citizen.

Larson said in a reply to the signers, "We have concluded that your petition may have merit and intend to issue a notice of proposed rulemaking requesting public comment on various options for incorporating a ban on radar detectors into the *Federal Motor Carrier Safety Regulations*. Your supporting data will become part of the docket for that rulemaking."

FHWA denied a petition for a ban on radar detectors in commercial vehicles in 1988, but the proposal's supporters believe several factors have changed since then.

There is support in Congress for a ban. When the U.S. Department of Transportation held a "Traffic Safety Summit" for state and local law enforcement officials this year, participants recommended that FHWA bar detectors in commercial vehicles.

The petition said "a ban at this time promises to be more effective than in the past because of the availability of radar detectors as an enforcement tool for police."

The petition also said new research has shown the link between radar detectors and speeding more clearly.

CONVENTION SESSIONS ON AUDIO CASSETTES

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Monday, July 16, 1990

___ **Tape 1: Opening Ceremonies** — James Templeton — Clayton Hatch; Greetings from Florida — Leonard Mellon; Greetings from Metro-Dade County — Stephen Clark; Welcome to Forum — T.C. Gilchrest; Remarks — Noel Bufe, Ph.D.; Keynote Speaker — Dennis Judycki

___ **Tape 2: GENERAL SESSION I** Truck Safety Programs/National Perspective; "Truck Safety Programs/CVSA Overview" — L.F. Rollin; "Safetynet" — Patricia Savage; "TRB Study on Truck Safety Needs" — Donald Muri

___ **Tape 3: Luncheon Address** — Adele Derby

___ **Tape 4: CONCURRENT SESSION A-1** Truck Safety Information Systems — "National Truck Safety Monitoring System" — Ted Chira-Chavala; "Implementing the NGA Truck Accident Reporting Method" — Larry Holestine; "The Importance of Data in Safety Programs" — James O'Day

___ **Tape 5: CONCURRENT SESSION A-2** Tort Liability — "Maintaining Records for Risk Management" Sheldon Pivnik; "Case Study: A Traffic Engineer Defends Traffic Accident Cases" — Howard Chapman; "Giving Testimony in a Traffic Accident Case" — Daniel Turner, Ph.D.

___ **Tape 6: CONCURRENT SESSION B-1** Contributions of the Health Community to Traffic Safety Policy; "Trauma Registry as a Data Source for Traffic Safety Policy" — Richard Cales; "Data Linkage: Police Accident Reports and Hospital Injury Records" — James Eastham; "Injured Drinking Drivers: How They Escape the System" — Carl Soderstrom; "The Medical Advisory Board and Driver Licensing" — Elaine Petrucelli

___ **Tape 7: CONCURRENT SESSION B-2** Court Systems — "Automated Traffic Records Systems — Lap Top Citations, Law Enforcement & Court Systems; — Daniel Robinson and The Honorable Daniel Deja, Chief District Court Judge, Michigan; State of Washington's Court Liaison Program; "Benefit of Stakeholder Networking" — Elain Hagseth

Tuesday, July 17, 1990

___ **Tape 8: GENERAL SESSION II** Optical Disk and Imaging; "From Paper Fleas to Optical Disks, a Solution to the Paper Problem" — Wayne Roice; "Virginia's Optical Disk System" — Fred Small; "Current Technology and Future Trends in Optical Disks" — G. Richard Moore

___ **Tape 9: CONCURRENT SESSION C-1** Traffic Records Update; "Update on Michigan's Traffic Records System" — Calvin Roberts; "A Master Plan for the New Chicago Safety Information System" — Ronald Pfefer; "Ohio's Approach to an Enterprise CCSRS" — Richard Paddock

___ **Tape 10: CONCURRENT SESSION C-2** Geographical Information Systems (GIS); "What Is GIS?" — John Hoggatt; "Applications on Crash Reduction" — David Cipra, Ph.D.; "Global Positioning Systems (GPS) Geographic Information Systems (GIS) Link" — R. Merrell

___ **Tape 11: GENERAL SESSION III** — Forum Exchange — A Time to Share — Cecil Colson

___ **Tape 12: CONCURRENT SESSION D-1** Microcomputer Based Systems; "Low Cost Accident Analysis Package, Downloaded to Local Users" — Joyce Emery, Ph.D. and Scott Moreland; "Traser" — Marlin Crouse; "Lanser" — James Taylor

___ **Tape 13: CONCURRENT SESSION D-2** Emergency Medical Systems; "Assessing Motor Vehicle Crash Outcomes — Using Linked Files" — Garland Land; "EMS/Data Linkage" — Dennis Utter; "Use of the Florida Injury Control Information System in Targeting Injury Prevention Programs" — James Croushorn

Wednesday, July 18, 1990

___ **Tape 14: GENERAL SESSION IV** Commercial Driver License Status Report; "CDLIS Update" — Duncan MacPherson; "Commercial Driver Experiences in Maryland" — John Lyding; "Commercial Driver License Experiences in Utah" — Skip Nielsen; "Commercial Driver License Biometric Identifiers" — Brian Withrow

___ **Tape 15: CONCURRENT SESSION E-1** Contemporary State Data Activities; "State Data Conference Update" — Mark Edwards; "Critical Automated Data Reporting Elements (CADRE)" — Chuck Ventury; "Development of a Quality Control Manual for Police Accident Records Systems" — James O'Day

___ **Tape 16: CONCURRENT SESSION E-2** Engineering Applications; "Virginia's Automated Roadway File" — Langston Spell; "Highway Safety Information Systems: a State Based System for Roadway/Accident Research" — Jeffrey Paniati; "GIS/Video Disc Demonstration Project' Vincent Nowakowski

___ **Tape 17: CONCURRENT SESSION F-1** Driving While Intoxicated; "Alcohol/Drug Use by Victims Admitted to Trauma Centers" — Bud Jay; "Texas BAC/ME Study" — Nancy Mounce; "DWI Enforcement Using In-Car Video/Drug Recognition and Evaluation Program" — Robert Martin

___ **Tape 18: CONCURRENT SESSION F-2** Automated Vehicle/Driver Data Systems; "Automatic Monitoring and Enforcement of Highway Restrictions" — Neil Emmott; "Innovations and Integration in Image Capture, Storage and Retrieval — David Hodges; "CEA-2 Legislative Liaison" — Garry Nishite

___ **Tape 19: CONCURRENT SESSION G-1**; "NSC Defensive Driving Course — Attitudinal Dynamics of Driving" — James Solomon

___ **Tape 20: CONCURRENT SESSION G-2**; "Workshop on the Classification of Motor Vehicle Traffic Accidents" — Alan Hoskin & Benjamin Chatfield, Ph.D.

Thursday, July 19, 1990

___ **Tape 21: GENERAL SESSION V** Seat Belt/Occupant Restraints; "Occupant Restraints: Finishing the Job" — Richard Pain, Ph.D.; "Enhanced Child Restraint Pilot Project in the State of Texas" — Michael Clem; "State System Restraint Data: Strengths and Weaknesses" — Jeya Padmanaban; "Analysis of Automatic Restraint System" — Donald Reinfurt, Ph.D.

___ **Tape 22: CONCURRENT SESSION H-1** Evaluation of the 65mph Speed Limit; "Evaluation of the Texas 65mph Speed Limit" — Quinn Brackett, Ph.D.; "Enforcement Impact on 65mph" — Stephen O'Connor; "Update of the 65mph Speed Limit-National Perspective" — Sherri Boerner

___ **Tape 23: CONCURRENT SESSION H-2** Law Enforcement Applications; "Accident Data: Law Enforcement Perspectives" — Don Hinton; "Police Reporting with Notebook Computer" — Maurice McGough

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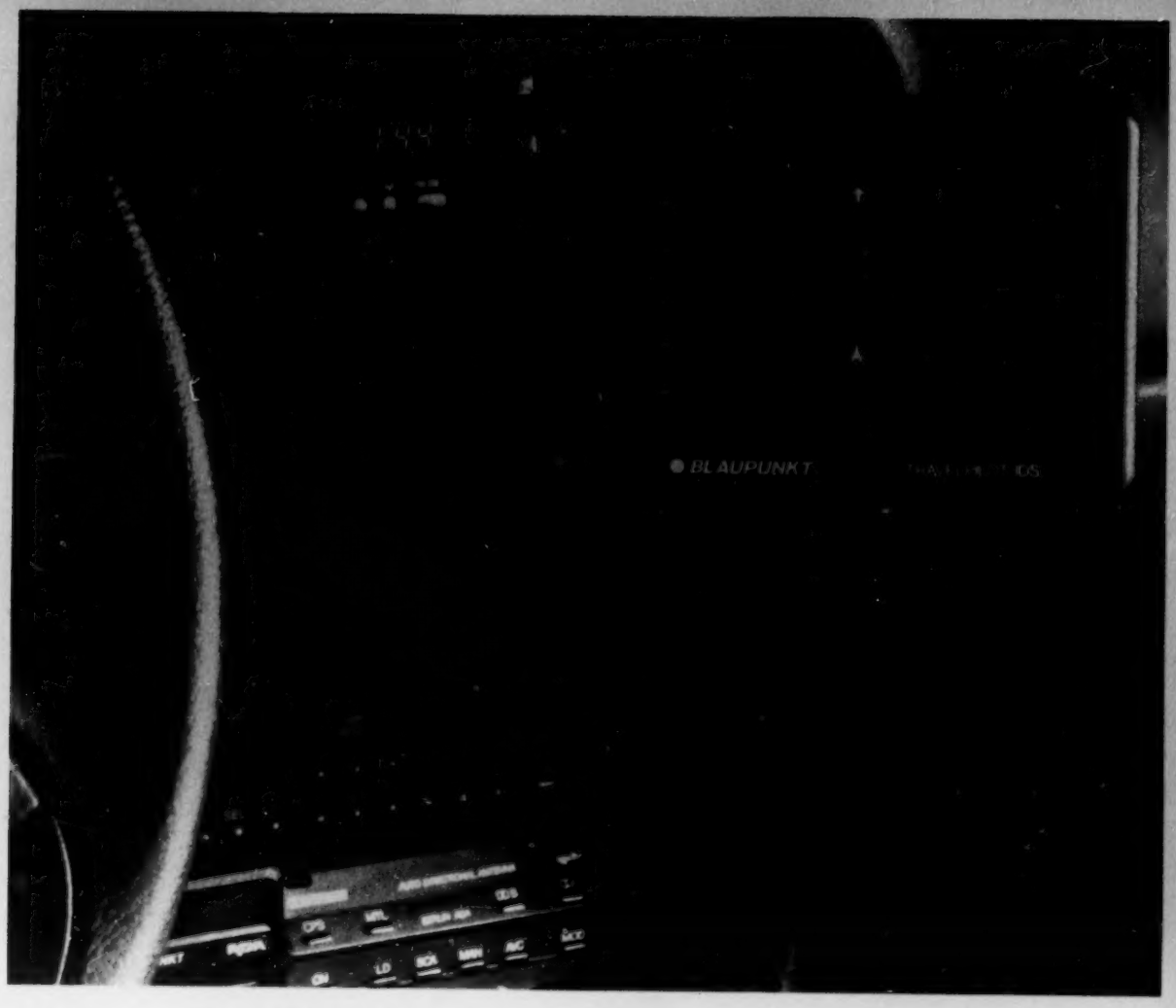


Is 'Robocar' Just Around The Corner?

In this scenario, cars drive themselves without crashes

BY THOMAS FRISBIE

FADE IN, ESTABLISHING SHOT. A traffic-clogged urban superhighway.
CUT TO: A garage door, opening up to reveal . . .

CLOSE UP: Robocar. MUSIC: Ta-DA.

Robocar is a typical auto of the late 20th or early 21st century. Its automated navigational system has just received a morning update from a central metropolitan traffic computer, and the incoming report has revealed the superhighway backup.

As Robocar leaves the garage, an arrow on an electronic dashboard map indicates Robocar's position, and the map provides an alternate route. The map is accompanied by instructions from a voice

A glimpse of the future: electronic street map tells motorists where they are, where they're going and how to get there. The self-contained system combines dead reckoning with street maps stored on compact disks. (Photo: Etak, Inc.)

inside the dashboard: "Turn right and prepare to take your third left . . ."

Soon, Robocar is safely on the alternate expressway route. Sensors embedded in the pavement keep Robocar in the proper lane, and radar-guided braking and cruise control ensure that Robocar won't collide with the vehicle in front. Robocar's horn will beep if the driver attempts to cut off another car while changing lanes. A vision-enhancement system, which also makes it easier to see at night, flashes warning images if trouble seems imminent. A driver-impairment monitor can tell that Robocar's driver isn't affected by lack of sleep or drugs. Robocar's driver doesn't have to worry much about speeders; vehicle identification microchips tell the electronic cops how fast everyone is going.

This morning, everything works smoothly. Robocar arrives at its destination on time and without incident. FADE OUT.

FOR MANY motorists and highway safety officials, the day of Robocar can't come too soon. Today's human drivers, unaided by Robocar's advanced technology, wind up in accidents that kill 46,900 people a year and injured 1.7 million.

No amount of technology can prevent all those crashes. But research has showed that a large percentage of crashes can be avoided if a driver reacts just a second sooner. Some engineers think Robocar can supply speedier reactions, as well as prevent drivers from making some dangerous mistakes altogether.

Part of Robocar already is here, of course. Even today, computers control auto engines, adjusting them from moment to moment to get the best fuel economy and the least amount of emissions. Computers are partly in charge of the brakes and other systems, too. They make braking, steering and ride control better. For many years, sensors embedded in expressways have notified highway officials in such places as Chicago and Los Angeles of traffic tie-ups, and computers help time traffic signals in such places as California and New York.

But many more Robocar features are just now taking shape on drawing boards or in experimental vehicles. In a few years, you may see them on the streets.

New Developments Monthly

"I think what is happening in research in the motor vehicle and communications industries is leading to new developments practically monthly," says Les Lamm, president of the Highway Users Federation, a trade association that works for highway safety and better roads.

General Motors' Delco Electronics Corp., for example, has built a Cadillac Seville with a radar cruise control that slows the car down on the expressway if another car suddenly switches lanes in front of it and then speeds it back up to 55 miles per hour when the lane is clear. A human driver in a car so equipped would not have had to touch the brake pedal or accelerator.

Experimental cars automatically slow if a car in front changes lanes.

Delco also is developing an infrared vision enhancement system that makes it easier for people with poor night vision to see cars and pedestrians in the dark. And there are plans for an electronic warning system that sounds — or maybe even voices — an alarm if there is a person, animal or another car behind a car that is backing up.

"The whole concept of radar braking is an element of IVHS (Intelligent Vehicle-Highway Systems)," Lamm explains. "It is a way to enable the operator to get better control of the vehicle.

"I do see definite safety benefits. In urban areas you could visualize fewer rear-end accidents. In rural areas, you eventually might be able to reduce or eliminate single-vehicle, run-off-the-road crashes — a late-night kind of accident. There are a lot of ways you can do it: a warning system, maybe a sensor in the vehicle that reads the sensor line in the road, maybe a beep or indicator.

"At a later stage, you might have a mechanical override that brings the vehicle back to the center of the lane."

Last March, researchers in the informal study group Mobility 2000 estimated that by the year 2010 IVHS might save roughly 11,529 lives, prevent 442,000 injuries and eliminate $22.2 billion dollars in damages caused by highway crashes.

Research Coordinated

To coordinate research efforts, government officials, university researchers and industry experts formally incorporated in August the nonprofit Intelligent Vehicle-Highway Society of America Corp.

"What we are trying to do is set up a mechanism to coordinate all the IVHS activities," says Lamm, who has agreed to be IVHS of America Corp.'s unsalaried president. "There is no shortage of research and activities. What we have lacked is any mechanism to tie them all together."

Will all this lead to Robocar's chauffeuring its otherwise-occupied occupants down busy highways?

"If we ever get to that stage, it is going to be middle of the next century," Lamm predicts. "I wouldn't want to bet against that because it is difficult to forecast, but it is far off in the future."

And there are more pressing problems down the road, particularly some involving the "human factors," Lamm maintains.

"I am sure there is going to be a good deal of research, both into whether operators will accept a particular feature, and whether they will use it, or whether it brings in some other problems, such as loss of privacy or a sense of Big Brother controlling everything," adds Lamm. "I think a lot of the concepts might work, but human nature won't permit them to. Part of the problem with trying to get safety improvements in place is that the average driver doesn't feel an accident will happen to him."

Robocar Amuck?

Some people undoubtedly will worry accidents will happen — and that they will be caused by new-fangled devices. Near the beginning of

the movie *Robocop*, an ungainly robot designed to do police work illustrates the perils of electronic gadgetry. Pointing a gun at an armed executive who is helping to demonstrate its capabilities, the machine says, "You have 60 seconds to put down your weapon." The executive drops his gun, but the robot doesn't notice, issues another warning and then riddles the executive with bullets.

Similarly, even Robocar's enthusiasts worry that turning over more control to electronic systems might encourage human drivers to pay less attention and might pose the risk of 200-car accidents.

A German-engineered car with video cameras mounted on the roof shows the hazards of letting the computers take over. The car's equipment keeps track of the edge of the road well enough to turn corners without help from the driver. But unforeseen obstructions, even something as common as a parked car, can plunge the circuitry into confusion and send the vehicle heading for a collision.

And even if the systems work flawlessly, motorists may not like the idea of having their speed and locations monitored by government agencies, including, presumably, the police.

FADE IN. ESTABLISHING SHOT. Robocar is on the expressway in a caravan of drowsy commuters vaguely watching video display screens, but not the road. The commuters are barreling along at 80 miles per hour. CUT TO: The basement office of a disgruntled computer hacker who has managed to penetrate the security of the traffic control system. The hacker grins as he prepares to execute his plan for sending a tidal wave of Chicago area commuters roaring into suburban Schaumburg. CUT TO: The expressway. Confusion reigns. Robocar is stalled behind a 300-car crash. FADE OUT.

Modest Claims

Lamm doesn't think Robocar is likely to cause massive crashes, but he does think it's important not to oversell the concept.

"If someone were to inflate the benefits of IVHS at an early stage and sell the principle to Congress or someone else, based on unrealistic evidence, that would eventually be a severe problem to overcome," he explains. "We are very conscious of not promising the world."

Clarence M. Ditlow III, who heads the Center for Auto Safety, says there is no point in expecting the world from new technology when the public hasn't been willing to pay for contemporary technology and maintenance of existing infrastructure.

"If you don't have anti-lock brakes, then it is premature to talk about radar brakes," says Ditlow. "I am very skeptical about putting sensors into roads if we don't have money to make sure bridges are adequately inspected and maintained."

Nevertheless, Robocar doesn't seem so far in the future in places such as Los Angeles, Minneapolis, Orlando, the northwest suburbs of Chicago, London, Tokyo and West Berlin. In each place, experimental programs are proposed or under way to see how Robocar can help make driving safer and less time-consuming. Transportation officials in the New England states are forming a consortium to study a system of their own.

The Basics

IVHS systems include four basic components:

"We are very conscious of not promising the world."

- Advanced traffic management, such as computerized traffic signals.
- Advanced drive-information systems.
- Advanced vehicle-control systems.
- Commercial vehicle operations, which include weigh-in-motion equipment for trucks, vehicle identification and on-board computers for trucks.

Much of the attention now is focusing on advanced drive-information systems, which primarily are geared to smoothing traffic flow, although engineers believe they will have a significant safety payoff, too.

The most advanced effort is in Europe. There, two organizations with complicated acronyms are funding research. One is PROMETHEUS (PROgram for European Traffic with Highest Efficiency and Unprecedented Safety), a seven-year joint effort of European governments, 14 automakers and 70 universities and research institutes. The other is DRIVE (Dedicated Road Infrastructure and Vehicle Safety in Europe), which is more government-oriented.

European planners envision whole platoons of computer-controlled Robocars zipping along highways at 90 m.p.h. with little risk of running into each other.

Recent Experiments

PROMETHEUS' and DRIVE's biggest effort so far has been their association with the experimental Ali-Scout and Autoguide systems.

In West Berlin's Ali-Scout, 700 kilometers of city streets have been wired with 250 infrared roadside beacons. A similar system with five beacons and 15 test vehicles called Autoguide went into operation last year in London. In each city, the roadside beacons monitor traffic flow and send data about accidents or other delays to a central computer, which in turn relays the information to on-board computers in test vehicles. The system tells drivers the best route to avoid traffic tie-ups and even recommends lane changes.

So far, officials say Ali-Scout has reduced travel times by 10 to 20 percent. The systems in both London and West Berlin are to be expanded to include approximately 300 beacons and 1,000 test cars each. Other cities in France, Italy and Germany are scheduled to join the test early in this decade.

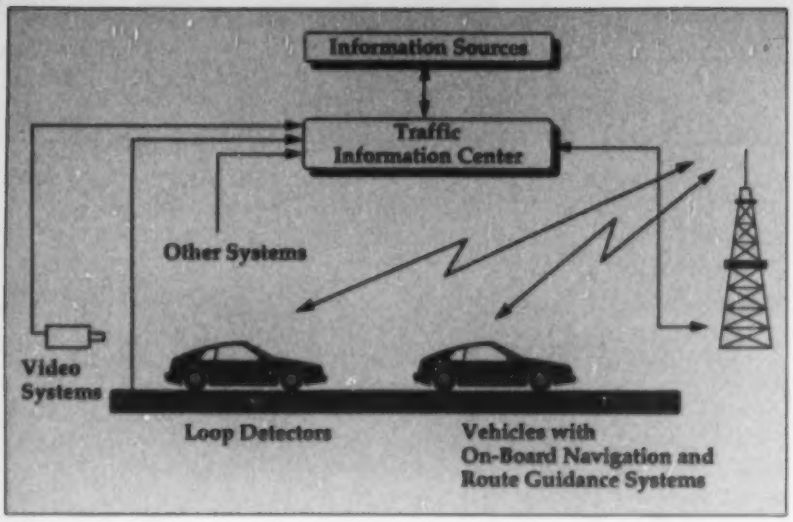
Test Driving Robocar

What is it like to drive an "Autoguided" Robocar?

An arrow on the instrument panel indicates the best direction to follow toward your destination. As you approach an intersection, a computer-synthesized voice tells you: "Left turn ahead." A bar graph on the instrument panel — representing the distance to the intersection in 30-meter intervals — gets shorter and shorter until it is time to turn.

Meanwhile, the central Autoguide computer monitors your car's progress. If it takes longer than usual to get where you are going, Autoguide interprets that as a traffic delay and directs other traffic along alternate routes.

Lyle Saxton, traffic systems division chief of the Federal Highway Administration, says he was impressed by a test drive of Ali-Scout, which is virtually the same system as Autoguide. Saxton says he was challenged by the Germans he was visiting to



An overview of the Intelligent Vehicle Highway System shows how sensors feed data to the traffic information center, which analyzes it and transmits instructions to Robocars on the road. (Schematic: Motorola Inc.)

drive them to a restaurant for lunch with no help other than having the destination punched into the vehicle's computer.

"I thought the system was pretty darn good," explains Saxton. "I was able to use it pretty effectively, and we did get to lunch."

Besides Autoguide and Ali-Scout, researchers are exploring rival systems, including some that use a compact disk to store electronic maps. And officials in the Netherlands have proposed putting microchip identification in cars that would tote up highway tolls for Robocar as it passed mileage markers. (In the United States, highway officials believe such a system could eliminate the numerous accidents around toll booths.)

U.S. Lags

In Japan, a smaller Autoguide-like program is being tested in and near Tokyo. But in the U.S., Robocar remains somewhat more primitive. In 1970, Congress terminated the development of an electronic guidance system, allowing Europe and Japan to take the lead in creating navigational networks.

But this year, a proposal is before Congress for funding of up to $35 million for a new intelligent-vehicle simulator that would speed development of Robocar features. The move toward navigational systems in the United States received another boost last April, when U.S. Department of Transportation Secretary Samuel K. Skinner announced an $8 million year-long test in Orlando of a 100-car system called TravTek, which will go into operation in 1992. TravTek will comprise 100 cars with on-board navigational systems that will be rented to tourists and residents who drive frequently. The computer screens in the cars will point out the least-congested routes, steering drivers away from construction and accident sites.

How can we put sensors in roads if we can't maintain bridges?

In Chicago, researchers at Northwestern University, Motorola Inc. and the Urban Transportation Center at the University of Illinois at Chicago have put together a plan to get smart cars on the arterial streets in Chicago's northwest suburbs. As many as 4,000 motorists will be involved in the five-year project at a cost of about $1,000 per vehicle. The computer system would use satellites, central traffic computers and 1,800 sensors already in place on Chicago area expressways in a network of sensors that is undergoing a five-year, $15 million expansion and upgrade.

Leading Experiment

The most advanced program in the U.S. is Project Pathfinder, a $1.6 million project by General Motors, the California Department of Transportation (Caltrans) and the Federal Highway Administration.

The Pathfinder experiment, the first phase of which became operational this year, includes 25 test Oldsmobiles that use a navigational system coordinated by a central computer. The cars will receive data about traffic conditions along some 12 miles of the Santa Monica freeway and five parallel arterial streets.

Caltrans officials hope to expand the program, which they believe would ease congestion, but that won't happen until a substantial number of people are prepared to pay for installing the equipment in their cars. Caltrans also is researching other Robocar features, including battery-powered message chips embedded in pavement that could communicate directly with passing autos. The chips could relay information about road work ahead and even do the work of billboards, passing on data about nearby restaurants, gas stations and lodging. Such a billboard system will be part of Orlando's TravTek.

"Once we have the basic electronic building blocl s in place, we can go on to add new capabilities," former General Motors Chairman Roger B. Smith said in a California speech last year. "How would you like your screen to give you information on parking lots, police and service station locations and scenic routes? How would you like to be able to send out an emergency signal if you have a breakdown? (Or in case of an accident, have that happen automatically, the moment your airbag sensor is activated)!"

Self-Contained Options

People who think centralized computer traffic control just won't happen have options because some Robocar features are entirely self-contained. A Menlo Park, Calif., company called Etak has developed electronic street maps stored on compact disks that are being marketed by Blaupunkt, a U.S. division of Germany's Robert Bosch. The system, called the TravelPilot, uses a compass, wheel sensors, a computer in the trunk and a dashboard monitor to show motorists where they are. Rather than relying on roadside beacons, the TravelPilot uses "dead-reckoning" to pinpoint a motorist's location — which means keeping a record of the starting point, speed and direction. The destination — supplied by

the driver — is shown as a blinking star on the monitor's map. The direction from the car and the distance to the destination are shown at the top of the screen. (Pathfinder uses adapted Etak gear.)

Etak sold 2,000 units of a previous model, and Blaupunkt is selling the new TravelPilot "in the $3,000 range," says Ann Badillo, Etak's marketing manager.

The TravelPilot isn't alone. Toyota has sold thousands of navigational systems (packaged with a color TV) in Japan on some of its luxury cars. Other companies are developing navigational systems that use signals from satellites rather than roadside beacons. Navigation systems based on satellites have had to cope with space-program delays, high cost for receivers and poor performance in urban areas, where buildings often obstruct the signals. Yet another option is Loran-C, a land-based radio navigation system originally developed for maritime uses. Loran-C will cover the continental United States early in this decade.

People don't believe a crash can get them.

FADE IN: Robocar is seen rolling home at the end of the day. The city's computerized sensor system hasn't been fully funded, but Robocar has its own compact disk system and numerous other self-contained safety features. The ride home should be uneventful. SHOT FROM CHOPPER: Expressways flowing smoothly. CLOSE UP: Driver's hand entering new destination in Robocar's system — the new car dealer. The newest cars have even more updated features, and Robocar's owner wants one. FADE OUT.

Whatever features wind up in the next generation of Robocars, Francis B. Francois, executive director of the American Association of State Highway and Transportation Officials, believes they will help make roads safer, even if they do nothing more than alert drivers to hazardous situations and traffic problems.

"Better informed motorists should be able to make better decisions, and this in itself should reduce accidents," Francois concludes.

TWO-WAY STREET

Out of Mind

Your magazine often has articles about how to reduce deaths and injuries to highway construction workers, but one point is always left out. While it is always mentioned that construction sites should be properly marked with warning and speed signs, nothing is ever said about how often such signs should be posted along the construction site.

I have traveled hundreds of thousands of miles on highways and passed countless road construction sites. All I ever see is a one-time warning, "REDUCE SPEED, CONSTRUCTION AHEAD," followed by one more sign further up the road giving the safe speed limit.

I might travel miles along the construction site and never see another speed limit reminder.

While the initial reaction to signs is to reduce speed, "out of sight, out of mind" takes over, especially when the construction site is miles long. Drivers invariably increase their speed in accordance with their own perception of the dangers they see, and do not relate to anything they passed thousands of feet back.

I think it would be a great safety factor to have speed signs posted more often along highway construction sites, such as every thousand feet. If it helps reduce construction site accidents from through traffic, it certainly would be worth the added cost.

William J. Holdorf
Albuquerque, N.M.

Driver Education

I recently read Brian O'Neill's article in the September/October TRAFFIC SAFETY, "ANTI-High School Driver Education."

I think that O'Neill fails to recognize one reality — what would the statistics look like without high school driver education?

Gig Specht
Vice President
Loss Control
Lockton Insurance Agency
Prairie Village, Kan.

Survey Response

Responding to a recent TRAFFIC SAFETY survey, Rebecca Seiden, director of the North Louisiana Safety Association in Shreveport, observed that people in her area have become distinctly less tolerant of drivers under the influence of alcohol.

She thinks that alcohol-server training may be having some positive effects, but cooperation from bar owners as well as managers remains "limited."

Answering another survey question, she said that police may be more likely now to consider their own driving behavior as an example to the public.

Any Comments?

"Two-Way Street" is *your* forum; a place for ideas and opinions on issues important to traffic safety professionals as well as comments about articles in previous issues of TRAFFIC SAFETY.

Please address letters to "Two-Way Street," TRAFFIC SAFETY Magazine, 444 N. Michigan Ave., Chicago, IL 60611.

Letters may be edited for clarity or because of space.

Checking Up On Checkpoints

Is it better to nab drunk drivers or nip their sips?

LAST JUNE the U.S. Supreme Court ruled that police do not violate the constitutional rule against unreasonable searches by setting up checkpoints to catch drunk drivers.

Around the nation, state courts had been divided on the issue. Some said the roadblocks were legal, others found them unconstitutional.

The state courts reflected a difference of opinion among traffic-safety professionals over whether the roadblocks are an efficient use of police personnel and other resources.

The NO argument points out that roadblocks catch few drunk drivers compared to the large number of officers required to staff them. Regular patrols result in more arrests.

The YES argument says that doesn't matter. The important thing is that roadblocks publicize the issue and make drivers avoid drinking for fear of getting caught.

We'd like your opinion, based on your experience as a traffic-safety professional.

You can just tear out this page and send it in. Or if you have to share your copy of TRAFFIC SAFETY with others, you may want to photocopy the page. Then, if we haven't provided enough space, you can write additional comments on the back.

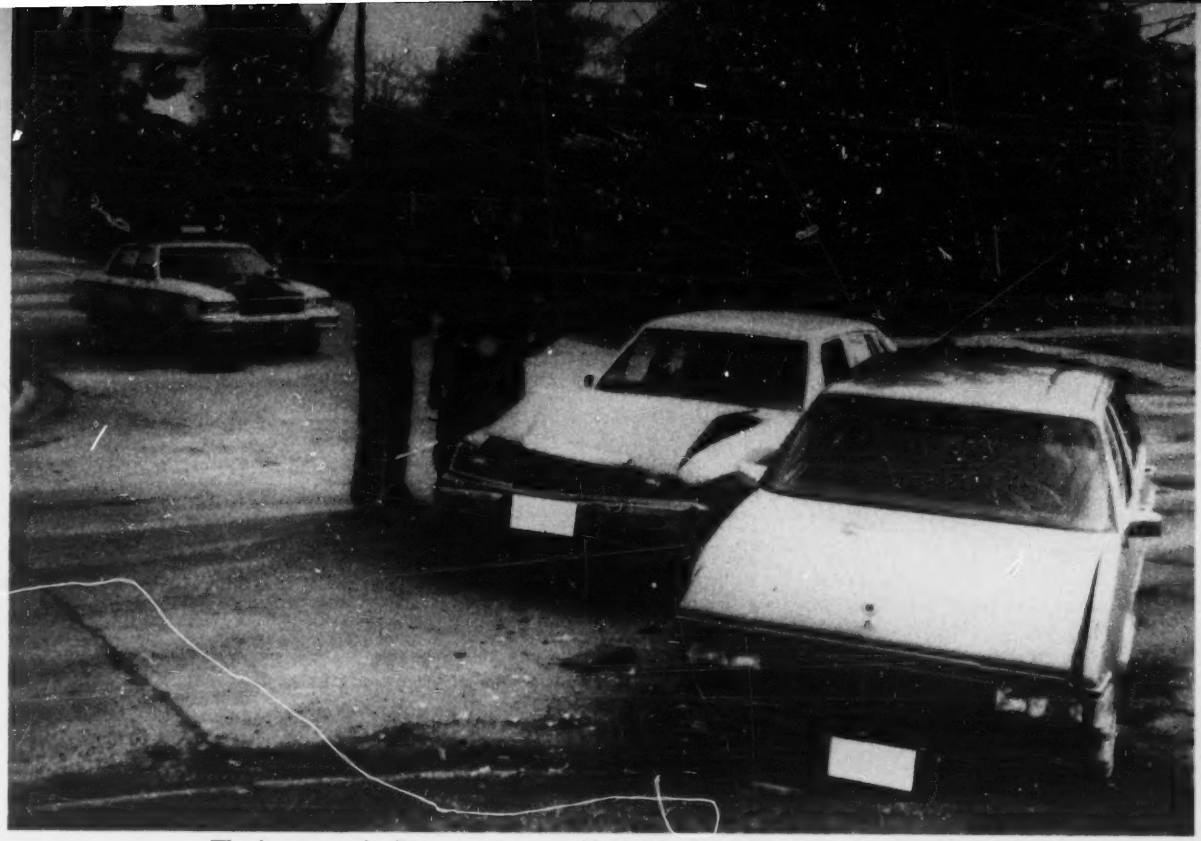
We'll publish what we find out in a future issue.

Mail your responses to:

TRAFFIC SAFETY Survey
National Safety Council
444 N. Michigan Ave.
Chicago, IL 60611

	Agree	Undecided
1. Police should use their power to expand the use of roadblocks to deter drunk driving.		
2. Police should not waste resources on roadblocks when they could be catching more violators by other means.		
3. The public will be likely to support wider use of roadblocks to make roads safer from drunk drivers.		
4. Wider use of roadblocks that may be perceived as adding to traffic delays and the other hassles of modern life may erode public support for traffic law enforcement.		

Comments:



The frequency of collisions at quiet neighborhood intersections is another example of how drivers become overly complacent in familiar surroundings or with familiar vehicle signal lights.

Familiarity Breeds Crashes

How many brake lights does it take to protect rear ends?

BY MICHAEL MALONE

IF ONE BRAKE light is better than none, then perhaps two are better than one. What if we place an additional light at eye level? Let's try different colors. Red? How about amber?

The value of brake lights in reducing traffic accidents is indisputable. But how far can safety professionals go in lighting up vehicles before being confronted with the ancient truth demonstrated by Aesop's fable about the fox and the lion: "Familiarity breeds contempt."

In 1986, the federal government mandated that all new passenger cars be equipped with center high-mounted stop lamps (CHMSL). This third brake light (in addition to two lower-rear brake lights usually part of the running light/back-up light configuration above the rear bumper) is most often mounted inside the rear window at bottom center. In combination with the previously standard brake lights, the CHMSL creates a triangular configuration when the brake pedal is depressed.

Center brake lights seem to be reducing crashes.

The effectiveness of this feature has been borne out by preliminary studies. A report released by the National Highway Traffic Safety Administration in May, 1987, compared "relevant" rear impacts of 1985 model cars (90 percent of which did not have CHMSL) and 1986 model cars which were all equipped with the new lights. The cars with CHMSL were 22 percent less likely to be struck in the rear while braking than cars without the eye-level brake light. CHMSL-equipped cars were also less likely to be involved in chain collisions. The effectiveness of CHMSL was about the same in large cities, suburbs and non-metropolitan areas.

Better Ideas

In an effort to take a good idea and make it better, refinements and additions to the CHMSL are being tested

and marketed. As noted in the September/October, 1989, issue of TRAFFIC SAFETY, the development of the Advance Braking Light Device (ABLD) could enhance the effectiveness of CHMSL by giving advance warning of a driver's intention to brake by lighting the CHMSL as soon as the driver begins to decelerate.

Working directly through the existing CHMSL, the ABLD activates the brake lights for one second if the accelerator release exceeds a predetermined maximum. In an emergency braking situation, the milliseconds of extra warning time provided by the ABLD may be enough to avoid a serious collision.

Another, more involved system is currently being marketed to transit bus operators. Called the Deceleration Alert System (DAS), it brackets the standard CHMSL with two amber lights. The amber lights are activated when the bus is started and go out as soon as the accelerator is depressed.

When the accelerator is released, the amber lights are illuminated and remain on until the bus begins to accelerate again. If the brake is applied, the amber lights go out as the red brake lights go on. If the brake is continually applied for more than three seconds, the amber lights begin flashing at 60 cycles per minute.

Safety Development Systems, a division of Haines Commercial Equipment Company, which has manufactured and marketed one type of DAS for ten years, claims to have a system that "takes the CHMSL one step farther and has been proven to cut rear-end accidents in transit buses by over 84 percent," according to Michael J. Rasmussen, vice president for transit relations. "The Deceleration Alert System is currently being used by transit properties across the nation."

Light Up

Perhaps the easiest way to improve on the safety value of vehicle lights would be, simply, to use them all the time. The most low-tech and inexpensive example of the concept, "if you've got it, flash it," is the use of daytime running lights. A simple switch automatically activates low-beam headlights and parking lights as soon as the vehicle is started; these lights automatically go off when the engine is turned off. It is essentially the same concept already in use for motorcycles.

One Canadian study suggests that this simple idea just might be a quick and inexpensive way to further reduce traffic accidents.

One scheme to keep drivers from running into the vehicle in front of them when it stops suddenly is the Deceleration Alert System. Amber lights flanking the center brake light flash on the instant the bus driver lets up on the accelerator. The following driver can begin to respond that much sooner.

Taking advantage of an extensive database (the Traffic Accident Information System) maintained by the Saskatchewan Highways and Transportation Office, a test was conducted using the 4,000 vehicles owned by the Provincial Central Vehicle Authority (CVA) of Saskatchewan.

Deceleration alert provides extra warning time.

The entire fleet was equipped with automatic daytime running lights (DRL). Two year's experience with DRL was compared to the previous six without DRL.

Study Results

Gordon A. Sparks and Russell D. Nuerdorf prepared the study for the CVA and limited the data to accidents with damages of more than $500. According to their written summary, the study further narrowed the field of interest. "Through a systematic breakdown of the total accidents with damages greater than $500, a profile of accidents that would be affected by the use of DRL, namely multiple-vehicle daylight accidents, was obtained.

"This profile classified the DRL related accidents by number, by severity, by cost and by accident configuration. It was on this accident profile that a detailed statistical analysis was conducted."

Overall, the study found there to be a decrease of 7.9 percent in multiple-vehicle daylight accidents in the fleet as studied. Over the same period of time, other types of accidents involving fleet vehicles remained about the same.

The study concludes, "Daytime running lights have a positive, statistically significant impact on the number of multiple-vehicle daylight accidents . . . It is expected that a comparable positive impact would be observed in the total Saskatchewan vehicle population . . . with the increased use of daytime running lights."

Certainly a look at the experience of other experiments (summarized in the report issued by the Saskatchewan Traffic Safety Services Department) using DRL would support this conclusion. Various fleets of trucks, buses, cabs and passenger cars have experimented with DRL for more than 20 years with favorable results.

Since the end of 1989 every new vehicle sold in Canada has been legally required to be equipped with an ignition link that keeps head and tail lights on whenever the car is running.

But Wait

Case closed? Not until a study pre-

A Crucial Millisecond Sooner

If daytime running lights or early-warning deceleration and braking lights can give a driver a few milliseconds more reaction time, antilock braking systems (ABS) become even more effective. The ABS sends data from sensors to an on-board computer which regulates the spin of the wheel to maintain traction and avoid wheel lockup.

While not required by the federal government, as air bags are, a growing list of cars are equipped with ABS as standard or optional equipment. There are currently 80 models that offer ABS.

ABS Standard

Audi: 100 Series, 200 Series, 90 Series, Coupe, V-8 Sedan. BMW, all models. Buick Reatta. Cadillac: Allante, Brougham, Fleetwood. Chevrolet: Caprice, Corvette. Ford: Aerostar Van, Bronco, Thunderbird Turbo. Lincoln: Continental, Mark VII. Mazda: 929S, MPV. Mercedes, all models. Mercury: Cougar ZR7, Sable. Nissan 300ZX. Olds: 98 Touring Sedan, Trofeo. Pontiac: Bonneville SSE, Grand Prix STE Turbo. Saab: 900, 9000. Toyota: Lexus LS400, Lexus ES250. Volvo: 740 Turbo, 760 Turbo, 780, 780 Turbo.

ABS Optional

Acura: Legend, Integra. Audi 80 Series. Buick: Electra, Le Sabre, Regal, Riviera. Cadillac: De Ville, Eldorado, Seville. Chrysler: Fifth Avenue, Imperial, New Yorker. Dodge Dynasty. Ford: Probe, Taurus, Thunderbird. Honda Prelude. Lincoln Town Car. Mazda 929. Mercury Cougar. Mitsubishi: Galant, Sigma. Nissan: 240SX, Maxima. Olds: 98, 88, Cutlass Supreme, Toronado. Pontiac: Bonneville, Grand Prix. Subaru Legacy LS. Volvo: 740, 760.

pared for the AAA Foundation for Traffic Safety is considered. The laboratory experiment ("Familiarity Effects of Daytime Rear Running Lights"), conducted in 1988, used simulators to test braking reactions to lead cars equipped with CHMSL or CHMSL plus a rear running light. The amber running light was mounted on top of the CHMSL.

The earlier tests, which had suggested the addition of this type of rear running light might improve reaction time for following drivers, used a single trial per subject in on-the-road tests.

The AAA study aimed at testing reaction time over a number of trials and added other variables, such as lighting conditions, type of highway and the subject's age.

With the exception of the first test, the CHMSL alone elicited faster response times than the CHMSL-plus-running-light. One explanation for the failure of rear running lights to improve reaction time overall is that the novelty of the additional running lights quickly disappears.

A novelty effect may dim the value of daytime running lights.

The researchers suggest that the previous high marks given running lights in studies of fleet use also might be due to the novelty effect, since only a small percentage of vehicles on the road use daytime running lights. They point to initial fleet studies which show CHMSL reducing accidents by as much as 54 percent, when operational experience shows a much lower accident reduction of 22 to 25 percent.

Weak Performance

The most disturbing finding might have been the very weak performance of the CHMSL-plus-running-light during the simulated night driving experiments. The combination lights scored much lower than the CHMSL alone. According to the research team, at night ". . . the relative slowness (of driver response) in the running light condition was especially pronounced."

The driver following a car with the CHMSL-plus-running-light views a constant triangular configuration of lights, with the only difference being a change from amber to red when the brakes are applied. With CHMSL only, the braking change is much greater — two tail lights followed by the triangular configuration of light.

The AAA study was limited to one particular application of running light (mounted above the CHMSL) and did not test for the effect of daytime running lights in avoiding all types of multi-vehicle accidents during daylight hours. However, the existence of a novelty effect which would produce greatly reduced reaction times after the initial test leads the researchers to suggest that additional studies be conducted using actual on-the-road experiences.

Catch 22

This conclusion points out a Catch 22 of testing for braking reaction. The AAA study used simulators because of the difficulty in getting more than one reaction time to a braking car on the highway. (The subject in the following car wearies quickly of the game and changes lanes, passes or otherwise avoids the test car.)

On the other hand, simulators have their own built-in bias, as pointed by George T. Taoka, writing in the March, 1989, *ITE Journal*: "Most [braking] experiments have involved the testing of drivers who were forewarned that their brake reaction times would be recorded.

"These studies therefore, measured brake reaction times under anticipatory conditions, which are shorter than the values that would be expected under normal driving conditions. The values that would most closely resemble normal driving conditions are those that are measured for drivers who have not been alerted as to the exact instant when braking will be required."

Comparing various experiments, Taoka concludes that those which test the reaction time of a driver in a following car to the braking by a driver in a lead car are the most reliable indicator of true reaction time.

The difficulty of testing for true braking reaction time because of interference from the novelty effect leaves the real long-term value of various lighting schemes still somewhat in the dark.

Police Officer Sarah Nicholson leads a group of children from the outdoor part of Safety City (note traffic markings on playground pavement in background) to additional activities inside the Mary McLeod Bethune School.

Making Kids Truly Street Smart

How New York City is saving its children from its drivers

BY MICHAEL ELDRITCH

HERE'S A WORST-CASE scenario that could have been written by a horror specialist like Stephen King. The potential victims are little kids. The menace is provided by the motorists of New York City, notorious for parking triple, ignoring traffic signals and chivvying cocker spaniels down sidewalks, uptown, downtown all around the town.

A start toward a happy ending is being made by the New York City Department of Transportation and the New York City Board of Education with their new Safety City Program.

The program is built around an actual Safety City, an outdoor, simulated environment outside the Mary McLeod Bethune School (P.S. 92) in Harlem's Community School District 5. It includes a street and intersection, pavement markings, traffic and pedestrian signals, street signs and other "street furniture."

It's a place where third-graders learn how to cross streets, operate bicycles and ride in cars safely. Other elements of the program include:

Indoor Learning Center

A classroom serves as a traffic-safety learning center, complete with video equipment and up-to-date learning materials.

Theater Performance

All kindergarten-through-third-grade children in District 5 are invited to see a traffic safety musical theater performance. Accompanying workbook assignments reinforce the lessons of the show.

Special Curriculum

In addition to specially trained instructors for on-site visits, third-grade classroom teachers, trained in the new Safety City curriculum, provide student preparation and follow-up. Also, a larger group of kindergarten-through-sixth-grade teachers will be trained in "Starting Early," a traffic safety/alcohol and drug awareness classroom curriculum.

Speakers' Bureau

Police officers, traffic enforcement agents and health-care providers are available to visit classes throughout the school year to highlight concepts learned at Safety City.

Community Participation

Parents and volunteers are encouraged to assist with activities at Safety City. As the program expands, a variety of opportunities will be available for broader participation by the Harlem community.

Student Internship

Junior and senior high school students are encouraged to serve as role models and assist with operations at Safety City. In future years, graduates of the Safety City program can return as interns and volunteers.

Evaluation

The Harlem Hospital Injury Prevention Project assists in evaluating the program's effectiveness.

Vehicles are the worst threat to New York kids.

The Threat

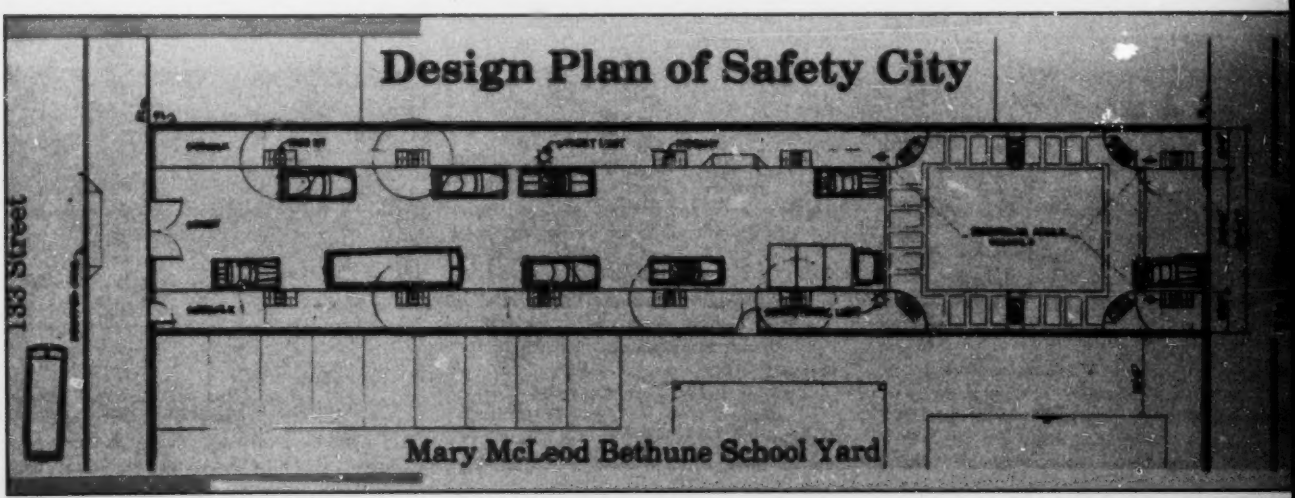
Motor vehicle crashes are, by far, the leading cause of accidental death to New York City children between five and 14 years old. In addition, approximately 3,500 youngsters in this age group are injured each year on the city's streets. Bicycle and motor-vehicle collisions accounted for more admissions to Harlem Hospital's Pediatric Trauma Unit in 1988 than any other type of injury.

Children today are more mobile than ever. They walk to and from school, ride in cars and buses and use bicycles, frequently without the protection of an adult. According to health experts, young children are at highest risk on the streets:

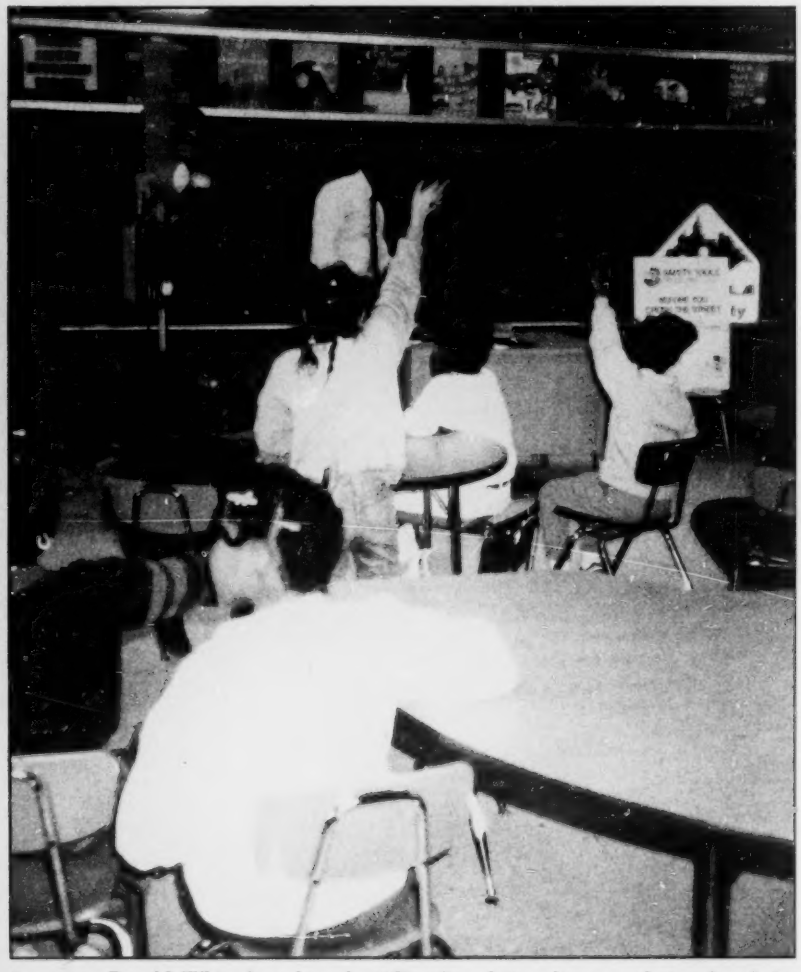
- They believe that if they can see a driver, the driver can see them.
- They think cars can stop instantly and that cars are "friendly."
- They cannot tell exactly where sounds come from.
- They cannot judge the speed of traffic.
- Their field of vision is one-third that of adults.
- They do not recognize or react to dangers they have not experienced.

Traffic safety training, to prevent deaths and injuries, must start early in life. The Safety City Program is a comprehensive traffic safety educa-

Third-graders are at the best age to learn traffic safety.



In New York City, crossing between parked cars is a fact of life. Traffic enforcement agent Virginia Prezzy shows children how to use their safety tools: eyes, ears, decision-making power.



Instructor Ronald Whittaker plays the "City Sounds" audio tape, designed to help children hone their listening skills.

tion strategy that helps children learn how to make safe decisions when they cross streets, ride in cars and drive bicycles. The learning-by-doing method used at Safety City keeps students looking, listening, talking, examining, touching and singing. As active participants in the education process, children internalize behaviors that will help keep them safe for a lifetime.

Several important principles guide the curriculum of the Safety City Program. They are by no means unique to traffic safety education.

Building Self-Esteem: A child who feels good about himself will make healthier lifestyle choices. In addition, he will be better able to resist negative peer pressure. Gaining knowledge — especially learning how to handle difficult situations — builds self-confidence. Using that knowledge to protect oneself and others fosters feelings of empowerment and self-worth.

Taking Responsibility: At Safety City, students learn about safety as a decision-making process. Children do not memorize absolute rules. Rather, they identify "tools" — knowledge and skills that help them be safer if they choose to use them. Assertion is knowing when and how to preserve one's right to be safer.

Helping Others: Safety City children are encouraged to share their traffic-safety knowledge with friends, family members and others in their community. The curriculum helps children to know when, where and how to intervene for the benefit of another.

Knowing the Environment: The sights and sounds of the city provide a wealth of information and behavioral cues if we are attuned to them. When children open their senses — seeing, hearing, touching and smelling — they become "safety sensitive."

Teacher's Role

Classroom teachers are vital to the success of the Safety City Program. The benefits students derive from the on-site activities are dependent, in large part, on the teacher's leadership and creativity. Teachers are encouraged to complete all the pre-visit activities and to reinforce each visit's lessons with at least one follow-up activity. In addition, they can incorporate safety themes into other subjects, such as social studies, mathematics and English.

Details

The Safety City Program includes two visits to Safety City. Each visit focuses on a different theme: "What We Can Do To Be Safer" and "What We Can Wear To Be Safe."

Each visit is split into outdoor and indoor activity periods:

Outdoor: Children receive hands-on instruction in a simulated environment, which includes a street and intersection, pavement markings, traffic and pedestrian signals, street signs and other "street furniture."

Indoor: At the Safety City Learning Center, children watch safety videos, create safety artwork and explore safety concepts.

On-site instruction is conducted by a member of the Safety Education Unit of the New York City Department of Transportation, as well as local police officers, traffic enforcement agents and crossing guards.

Also, all Safety City children see "Ring Around a Rainbow: A Traffic Safety Presentation" by The Shadow Box Theatre.

Evaluation is built in to make sure the program works.

Pre-Visit and Follow-Up

The following items are provided by the Safety Education Unit of the NYC Department of Transportation to help carry out the activities:

- "Ring Around a Rainbow" student workbooks and teacher guide.
- Video cassette of "Willie Whistle" and "Safety Belt Rap."
- A City-Sounds audio cassette.
- Safety brochures for family members.
- "Safety Tools" poster.

YES Magazine.

Helping children to help keep each other safe is what YES (Youth Educating for Safety) is all about. *YES Magazine* facilitates the learning/sharing process by publishing student essays, artwork, poetry, stories, cartoons, puzzles and songs. The publication is written by and for New York City children. As part of the Safety City Program, a special junior edition of *YES Magazine* is issued.

The effectiveness and quality of the Safety City Program will be measured in four ways:

Children will take a short quiz prior to the traffic safety theater performance and after their second visit to Safety City.

Teachers will be interviewed by the Safety City coordinator after the second visit.

Harlem Hospital will monitor all intakes at the Pediatric Trauma Unit as an indicator of Safety City's impact in reducing the involvement of children in motor-vehicle crashes.

Children will share the traffic-safety message with playmates, relatives and others, teaching them how to make safer decisions.

Material for this article was supplied by Andrew Scharf, Safety City Coordinator. For further information, contact him at the New York City Department of Transportation, 51 Chambers St., Room 1404, New York, NY 10007; (212) 566-1890.

OSHA Tightens Safety Belts Another Notch

New on-the-job rules to require driver training, too

BY JIM CASTELLI

OSHA HAS proposed mandatory safety belt use and driver training for more than 35 million workers who drive on the job.

Labor Secretary Elizabeth Dole says "once implemented, this standard will save more lives than any other OSHA safety standard."

The National Safety Council has long advocated this approach. Dole and Gerard F. Scannell, assistant secretary of labor for the Occupational Safety & Health Administration, announced plans to develop this proposal at the 1989 National Safety Congress. The National Highway Traffic Safety Administration (NHTSA) also supported it.

Motor vehicle accidents account for 2,100 job-related deaths in the United States each year, according to OSHA. They also account for 91,000 lost-workday injuries. (National Safety Council figures indicate there are 3,900 deaths and 200,000 disabling injuries.)

Dole says the proposal will save 465 to 684 lives each year. She says it will also prevent between 22,221 and 31,635 lost-workday injuries each year.

"More than 36 percent of workplace fatalities are the result of vehicle accidents," Dole says, "and occupant safety belts can prevent nearly half these deaths." Dole first supported mandatory safety belt and driver training programs on the job when she was Secretary of Transportation in the Reagan Administration.

The proposed rule applies to companies with one or more employees. Companies with fewer than 10 employees are exempt from some record-keeping requirements.

This is what the proposed rule would require:

- All employees must wear safety belts on the job when in cars, trucks or other vehicles in which federal regulations require safety belts.
- Those who ride motorcycles on the job must wear helmets.
- Employers must provide a brief driver safety program that includes vehicle familiarization: safety belt and motorcycle helmet use; and effects of alcohol and other drugs on driving.
- Initial training and a refresher course every three years must be taught by a "qualified, skilled instructor."
- Employees hired after the rule's effective date cannot drive on the job until they take the driver safety course or prove they've had equivalent training in the past three years.

OSHA asked for comment on other issues:

- Should OSHA require vehicle maintenance plans or regular vehicle safety inspections?
- Should OSHA require safety helmets for bicycle couriers?
- Should OSHA handle driver training for employees in industries with frequent turnover, such as construction, differently?
- Would a certificate from a previous course provided by a new employee be sufficient?
- How should OSHA respond to the problem of overloading vehicles with passengers?
- Should there be a requirement to retrofit with additional seat belts, or should the agency prohibit the transportation of workers in any vehicle not equipped with belts?

Comments, in quadruplicate, must be postmarked no later than Nov. 9 and sent to the OSHA Docket Officer, Rm N2634, 200 Constitution Ave., N.W., Washington, D.C. 20210. Specific comments for general industry should be designated S-776-G, for maritime S-776-M, for construction S-776-C and for agriculture S-776-A.

Quicker DUI Revocation

The NHTSA and the National Transportation Safety Board (NTSB) have launched a new coalition to support the use of administrative license revocation in the 21 states that do not now have it. Almost 30 organizations, including the National Safety Council, belong to the coalition.

Administrative license revocation, also known as "administrative *per se*," allows the police to revoke the licenses of drivers who refuse or fail a chemical test for alcohol in the blood without waiting for a court conviction. In some cases, revoking a license can take as little as a week.

NTSB Chairman James Kolstad, says "A situation has developed where known drunken drivers — those arrested for DWI and found to have illegal blood alcohol concentrations — are being allowed back on our roads to drive until a court trial can be held. Many of them are driving drunk again and again with a valid permit in their pockets. This simply has to stop."

Coalition members are pooling resources at the local level to lobby for administrative license revocation laws.

NHTSA says an administrative *per se* law should include the following:

- The arresting officer should serve notice of license revocation, take the driver's license and issue a temporary license which is good until the revocation comes through.
- NHTSA recommends revoking a license for 90 days for first offenders, one year for second offenders and longer for repeat offenders.
- The program should be self-sufficient, relying for income on fines and fees of those drivers whose licenses are revoked.

Supporters of administrative license revocation argue that it is an effective deterrent to drunk driving because it makes the link between drunk driving and a penalty much clearer.

A variety of studies show that administrative license revocation reduces accidents:

- A 1989 study of three states in the West found that two had a significant decrease in recidivism and the third had decreases in the rates of traffic offenses after adopting administrative *per se* laws.
- A 1989 study of 17 states found that the median reduction in fatal crashes was 7 percent.
- A 1988 study estimated that administrative license revocation reduces fatal crashes by an average of 9 percent.
- Crash fatalities in Iowa reached a 40-year low in the first year of administrative *per se*.

The states which do not have administrative license revocation laws are New York, Pennsylvania, Ohio, Michigan, Massachusetts, Rhode Island, New Hampshire, New Jersey, Virginia, Kentucky, Tennessee, South Carolina, Georgia, Alabama. Arkansas, Texas, South Dakota, Nebraska, Montana, Idaho and Washington.

Organizations in the coalition include the American Association of Motor Vehicle Administrators, American Automobile Association, Advocates for Highway and Auto Safety, the Insurance Institute for Highway Safety, American Trucking Associations, the National Association of Governors' Highway Safety Representatives, Mothers Against Drunk Driving, the Motor Vehicle Manufacturers' Association, the Police Executive Research Forum and the National Association of State Alcohol and Drug Abuse Directors.

Deaths Down in 1980s

NHTSA Administrator Jerry Curry says the 1980s were "the most significant decade in the history of U.S. efforts to reduce crash casualties." Curry said the 1989 fatality rate was 2.2 per 100 million miles of travel, "a remarkable improvement from the 3.3 figure registered a decade earlier."

If the 1980 rate had remained constant throughout the '80s, Curry said, 124,190 more people would have died in that time.

There were 45,555 traffic deaths in 1989, down from 53,543 in 1969 and 51,093 in 1979.

Curry credited more widespread use of safety belts and efforts to reduce drunk driving. He cited figures to show reductions in deaths linked to drunk driving:

- In 1989, alcohol-related driving deaths were 11 percent below 1982.
- The proportion of Americans killed in crashes involving intoxicating levels of alcohol fell from 46 percent in 1982 to 39 percent in 1989.
- Among 15- to 19-year-old drivers involved in fatal crashes in 1989, 17 percent had blood alcohol levels above .10, down from 28 percent in 1982.

Curry says use of safety belts and child safety belts saved more than 21,000 lives from 1983 to 1989. He said all 50 states and the District of Columbia now have child safety seat laws and that 36 states and the District have safety belt laws.

A NHTSA program designed to improve traffic safety is the Drug Evaluation and Classification (DEC) program, which trains police officers to recognize when a driver is drug impaired. Curry says, "Studies indicate that 10 to 22 percent of the drivers in serious and fatal crashes have drugs other than alcohol in their system — often in combination with alcohol. NHTSA is training police to identify signs of drug impairment and present the evidence effectively in court."

So far, NHTSA has trained more than 1,000 police officers in 26 communities in 10 states. More than one-quarter of them were trained as instructors, so they can teach others.

The Los Angeles Police Department pioneered the program in 1980 and NHTSA and the National Institute on Drug Abuse have validated it. The program trains police to observe a suspect's appearance, behavior, performance of psychophysical tests, eyes and vital signs in determining whether a driver has used drugs.

Curry says 15 states and Puerto Rico are ineligible for the program because their laws do not allow for more than one chemical test or do not allow testing for drugs other than alcohol.

NHTSA has trained trained police in Arizona, California, Colorado, Florida, Indiana, New York, Nevada, Texas, Utah and Virginia.

EVENTS

Driving Attitudes

NOVEMBER

Hazardous Materials Transportation Training — Nov. 1-2, Las Vegas; Nov. 13-14, Kalamazoo, Mich. — National Safety Council, 444 N. Michigan Ave., Chicago, Il 60611. (312) 527-4800, extension 8407.

Motor Fleet Maintenance Supervision — "Maintenance of Commercial Vehicles, Phase B," Nov. 6-8, University of Alabama; "Maintenance Management," Nov. 27-29, Michigan State University. — Motor Fleet Supervisor Training, Office of Executive Director, A364 Engrg. Bldg., Michigan State University, East Lansing, MI 48824-1226. (517) 353-1790.

DDC-Professional Truck Driver — Nov. 26-28, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

Traffic Engineering Academy, Transportation Site Impact Analysis Workshop, Workshop on Traffic Signal Control-Isolated Intersections, Geometric Design Workshop — Nov. 26-30, 1990 and Dec. 2-6, 1991, Evanston, Ill. — Institute of Transportation Engineers, 525 School St., S.W., Washington, DC 20024-2729. (202) 554-8050

DDC-Coaching the Mature Driver — Nov. 29-30, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

DECEMBER

Motor Fleet Maintenance Supervision — "Maintenance Management," Dec. 4-6, University of Delaware — Motor Fleet Supervisor Training Office of Executive Director, A364 Engrg. Bldg., Michigan State University, East Lansing, MI 48824-1226. (517) 353-1790.

DDC-Attitudinal Dimensions of Driving — Dec. 4-6, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

Hazardous Materials Transportation Training — Dec. 5-6, Detroit — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8407.

DDC-8 — Dec. 10-12, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

DDC-4 — Dec. 13-14, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

JANUARY 1991

27th Command and Management School — Jan. 7-March 22, 1991, University of Texas at Dallas — Southwestern Legal Foundation, Box 830707, Richardson, TX 75083-0707. (214) 690-2394.

Hazardous Materials Transportation Training — Jan. 9-10, Seattle; Jan. 16-17, Cleveland — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8407.

Symposium on Work Zone Traffic Control — Jan. 18-19, Orlando, Fla. — Federal Highway Administration, (703) 285-2517; or Bellomo-McGee, Inc., 8330 Boone Blvd., Vienna, VA 22182. (703) 847-3071.

FEBRUARY 1991

Principles of Fleet Administration Safety — Feb. 4-6, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

DDC-8 — Feb. 4-6, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

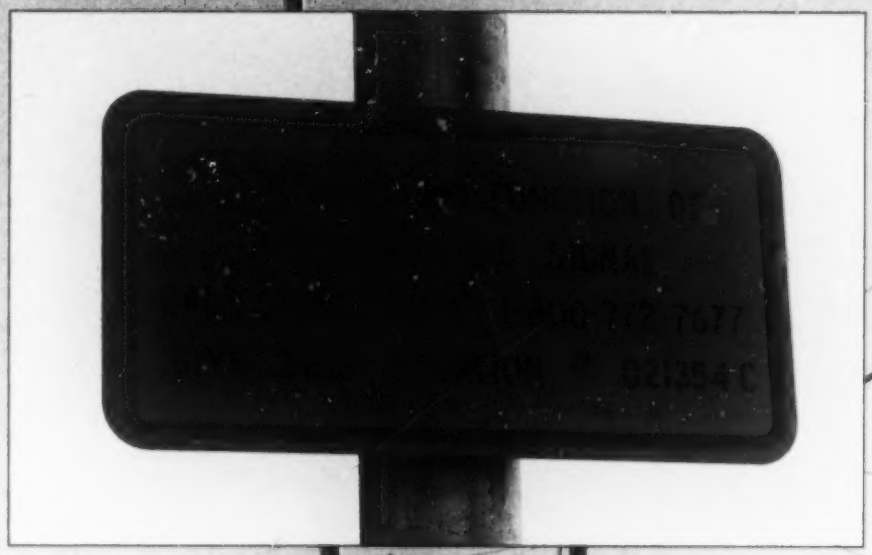
DDC-4 — Feb. 7-8, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

DDC-Attitudinal Dimensions of Driving — Feb. 13-15, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8527.

Hazardous Materials Transportation Training — Feb. 6-7, Minneapolis/St. Paul; Feb. 20-21, Los Angeles; Feb. 27-28, Indianapolis — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, extension 8407.

DDC-Professional Truck Driver — Feb. 25-27, Chicago, Ill. — National Safety Council, 444 N. Michigan Ave., Chicago 60611. (312) 527-4800, extension 8527.

A Texas law requires signs (inset) posted at railway crossings to make it easy for any passerby who notices something wrong with a warning signal to phone in free. Besides giving an 800 number, the signs identify each crossing.



Wrong Signals Put Right

Texans call 1-800 to prevent railway crossing tragedies

"THE WRECK on the Highway" isn't just a song to many rural families who live near railway crossings. From time to time they can see something has gone wrong with the crossing warning signals. Even if they phone the sheriff's office, it may take a while for someone to come out to fix the signals. Meantime, there's real danger of a disaster.

Now Texas has found a better way.

A virtually unpublicized state program to report railroad crossing signal problems has contributed to a 24 percent decline in crossing accidents since 1983, a federally sponsored study by the Texas Transportation Institute (TTI) at Texas A&M University found.

The successful Texas program is now being considered for adoption nationally, according to the TTI evaluation of the Texas Railroad Crossing Safety Information Act that created the Texas 1-800 railroad notification program.

The program allows individuals to report, using a toll-free number, any problems of train-activated rail-highway crossing signals to the Texas Department of Public Safety (DPS), which then reports malfunctions to appropriate railroads. Signs with the 1-800 number and a signal identification number are posted on railroad crossings on state highways.

Despite little publicity to promote the 1-800 number, the program averages 400 calls a month. Since the law went into effect in 1983, more than 17,500 problems have been reported.

Railroads Cooperate

The railroads have been glad to cooperate. One railroad official commented: "Since this program has been in effect, our dispatcher's office has received numerous calls, particularly on weekends and late at night, concerning malfunctions. This has permitted us to dispatch a maintainer without delay. Quite possibly, this law has prevented several accidents."

Some police departments and sheriff's offices complained of the lack of publicity. Police found out about the program only when the signs went up at the crossings. Still, the problem solved itself. Police could read the signs as well as the public.

Railway crossing crashes decline 24 percent with new Texas law.

A few police officers said that even under the new program, the railroads sometimes were slow to respond. "I have one crossing that has been reported seven days straight," said one.

But before the new system took effect, that crossing might not have been reported at all because passersby wouldn't have known what to do about it.

Supported by the U.S. Department of Transportation and the Federal Railroad Administration (FRA), the TTI study verified the seven-year program's effectiveness, said study director Jack Lamkin of the TTI Economics and Planning Division at Texas A&M.

Problems Corrected

"More than half of the Texas law enforcement officials we surveyed were not aware of the program either," Lamkin said. "But our evaluation showed the program is being used by the public and the problems they report are being corrected by the railroads."

The program is a cooperative effort involving the state, the public and the railroads, with the common goal of improving railway-highway safety, Lamkin said. The 1-800 program is not a cure-all for railroad crossing problems, but solving signal problems improves the overall system.

"If people call and later see problems corrected, the integrity of the entire system is improved. People have more regard for the warning devices and tend to follow them better. If they think the signals are wrong, they tend to disregard the entire class of safety efforts," Lamkin said.

County Roads Too

The 34 railroads that operate in Texas have 13,747 crossings in the state, but only the 2,002 crossings on state-maintained highways have had signs with the 1-800 number until this year, Lamkin said. The legislature widened the law to include crossings on county roads in the last session.

Calls to the 1-800 number go to special DPS operators who log the calls and location of the signal problem and then contact the railroad responsible for the crossing. More than half of the problems are reported to the railroads in under two minutes, the study found.

However, the collected data from nearly seven years of reports is not being utilized by either the railroads or state safety experts to determine any particular pattern of signal problems, Lamkin said.

More Research

"The early notification program is doing as well as intended, but more

work needs to be done in research with the collected data," Lamkin said. "We tried in the study to show ways the data could be used by the railroads and the state to improve grade crossings."

One area the data could be used to improve railroad crossing safety is in non-train involved accidents, Lamkin said. Such accidents occur four times more often than train-vehicle collisions at railroad crossings. Of the 13,875 accidents at Texas crossings from 1980 to 1988, more than half involved no train.

"Motorists are behaving in a way that is not car-train related that is increasing accidents. The 1-800 program data can be used to help find out what it is," Lamkin said.

Improving communication between law enforcement officials and railway maintenance personnel is recommended along with expanding public awareness of the program, Lamkin said. Other recommendations include providing summary reports to railroads to improve their capabilities to implement long-term safety renovations and including all signal crossings in the program.

Surprising number of crossing collisions don't involve a train.

Lamkin noted the FRA had received so many requests nationwide on the 1-800 program it asked him to prepare a slide show for the agency to lend to states seeking information on the program. Delaware — with one railroad and about 12 crossings — is the only other state with a similar program, he said.

TTI officials at Texas A&M are continuing to monitor the information generated through the program, Lamkin added.

MADD Glad

Mothers' group sees its anti-DWI program taking hold

BY ANNE RUSSELL

MOTHERS AGAINST Drunk Driving is an organization with a clear mission, according to national president and spokesperson, Ms. Micky Sadoff.

"Our mission is to stop drunk driving and to support victims of this violent crime," stated Ms. Sadoff. "All our activities derive from these two goals and that's where we direct our energies."

Although the specific wording of MADD's mission statement has changed somewhat over the years, these twin tasks have provided the bedrock of MADD's activities since its beginnings a decade ago.

During the past two years MADD's energies have been increasingly focused on these goals.

On the DWI reduction side, some of this intensity has been channelled through its Impaired Driving Issues program — a combination of training and resources drawing together key state and community leaders and an array of research and traffic safety expertise. MADD notes with satisfaction that the country is beginning to see the results; increasing numbers of states are adopting legislative priorities of the organization, such as the administrative license revocation and lower blood alcohol limits.

Attitude Problem

MADD recognized early that the problem of impaired driving permeates our society, perpetuated by the attitude that alcohol-related crashes are unavoidable "accidents." Through a broad range of public service messages, public awareness campaigns and informational approaches, MADD has fought apathy and other inadequate responses. Educational and special event programs have been especially necessary to reach youth, who are at increased risk. MADD has also supported and encouraged law enforcement at state, local and national levels.

But a major avenue for changing both attitude and behavior remains legislative and public policy.

As grassroots activists from all walks of life, MADD volunteers have frequently come on the legislative scene with great zeal but little or no experience in promoting change through political and governmental processes. By trial and error, through successes and setbacks, experience was gained, only to be lost as advocates burned out or moved on to other pursuits. "Reinventing the wheel" has been a common phenomenon as new members learn the political ropes and must struggle both to promote favorable legislation and defeat those antagonistic to MADD goals.

New committee solves problem of burnout.

In 1987, when the board of directors of MADD formed a legislative and public policy committee, its chairperson was determined to help MADD activists condense some of this learning process. Rebecca Brown, the committee chairperson and mother of a son killed by a drunk driver, had organized a MADD chapter in her county and was instrumental in other MADD "firsts" in her state. One of her primary goals as chair of this committee was to spare other activists from the need to continually start from scratch.

"At the state legislature, I found

myself being cast as the 'expert' on issues I was pressing to reduce impaired driving, when I knew that I needed far more information myself on what really would save more lives," said Ms. Brown. "Most activists then had no clear idea where to go to obtain concise, up-to-date information on the important issues."

Expertise Pursued

Brown went in pursuit of the expertise which could provide answers to her questions and those of legislators, so that she and other activists could say with assurance, "This DUI countermeasure will prevent X percent of drivers from being in alcohol-related crashes and will save X lives."

Consulting with officials in the federal agencies who were knowledgeable about the drunk driving issue, Brown convened an ad hoc task force of 15 or 20 notable experts in the traffic safety and research fields to provide their advice and assistance. MADD brought to them 50 actions or sanctions suggested by their state representatives as worthy goals for MADD.

The task force's goal, as requested by MADD, was to evaluate these proposals in terms of their potential for saving lives from the threat of an impaired driving tragedy. These issues would then be recommended to MADD as public policy priorities.

The Big Seven

Seven countermeasures were identified as a package of measures which would work together to maximize DUI deterrence and save lives. These measures included: administrative license revocation; sobriety checkpoints; self-sufficient (offender-funded) enforcement programs; preliminary breath test use; .08 illegal per se; mandatory BAC testing for all drivers in fatal and serious injury crashes; and license plate impoundment for repeat offenders. Comprehensive resources on each issue were compiled into a volume titled *The Impaired Driving Issues Compendium*.

Workshops bring experts together with officials.

Ms. Sadoff remarked, "*The Impaired Driving Issues Compendium* has been tremendous, because it puts answers about the DWI problem and some key remedies at your fingertips. But even more significant, the training sessions bring together those who can unite to accomplish these necessary changes and foster a greater understanding of MADD and our common goals."

Ms. Brown agreed, and pointed out that recent workshops have drawn the participation of state governors as well as legislators, judges, prosecutors and other key officials. The workshop participants and MADD leaders were welcomed to Harrisburg, Pa., in March by Pennsylvania Governor Robert Casey, and in Annapolis, Md., Governor William Donald Schaefer gave the keynote address on administrative revocation. Illinois Secretary of State Jim Edgar made an appearance at the Chicago workshop, as did Michigan's Secretary of State Richard H. Austin in Lansing.

Series II Workshops

Currently in the midst of Series II of its workshops, MADD is hard at work developing additional volumes of the valuable compendium. Future volumes will deal with youth issues, additional DWI countermeasures and responsible alcohol-serving.

Aside from the professionals who contributed valuable expertise and time to the ad hoc task force, MADD recognizes this important program would never have come about without the assistance of the U.S. Transportation Department's National Highway Traffic Safety Administration (NHTSA), in the form of grants to provide education and resources, as well as extensive consultation. In recognition of that assistance, MADD presented a Public Service Award to the agency's Office of Alcohol and State Programs at MADD's Annual Congressional Reception in February, 1990.

In addition, extensive logistical and resource support has been provided through the National Safety Council.

"This partnership has produced the impetus for tremendous progress in fighting impaired driving. I'm excited about what lies ahead as the program moves throughout the states," remarked MADD's Rebecca Brown. "I am especially pleased to think that five years from now we will be able to see the value of this program expressed in terms of the number of lives that have been spared."

Presenters

Presenters at the workshops have included Dr. James Nichols of NHTSA; John Lacey, Mid-America Research Institute; Dr. Robert Voas, Pyramid Planning; Joel Watne, Minnesota Attorney General's Office; Robert Reeder, Northwestern University Traffic Institute; Victor Colman, Santa Clara Public Health Department, and the National Safety Council's Al Lauersdorf, among others.

Since the Impaired Driving Issues program began, MADD has recognized the contributions made by participants to passage of adminsitrative license revocation in California, Florida, Connecticut, Maryland and Vermont, as well as lowering the "per se" level to .08 in California and Vermont. Other states continue to press for these and additional measures as the program continues. Momentum continues to build as a result of this effort, promising hope for even greater safety on our nation's streets and highways in the years ahead.

'Five years from now . . . we'll see the number of lives spared.'

Anne Russell is assistant director of public policy and governmental relations for the national office of Mothers Against Drunk Driving. She works with the public policy committee of the MADD board of directors on impaired driving issues and federal and state legislation.

Information about MADD programs can be obtained from the MADD national office, 669 Airport Freeway, Suite 310, Hurst, TX 76053. Phone: 817/268-6233.

ACCIDENT FACTS

National Safety Council

1990 FINAL CONDENSED EDITION

ISSUED AUGUST 1990

For the eighth consecutive year, accidental deaths were estimated to number less than 100,000 in 1989. The death total was 94,500, a decrease of 2 per cent from 1988. Deaths by class are shown in the box below. Disabling injuries numbered 9,000,000, including 340,000 that resulted in some degree of permanent impairment—ranging from partial loss of use of a finger to blindness or complete crippling.

DISABLING INJURY TOTALS for the principal classes of accidents were: Motor-vehicle, 1,700,000; public nonmotor-vehicle, 2,400,000; home, 3,400,000; work, 1,700,000. Duplications of motor-vehicle with other classes numbered 200,000.

ACCIDENT COSTS amounted to about $148.5 billion. This includes wage loss of $37.7 billion, medical expense of $23.7 billion, administrative and claim settlement costs of insurance, $28.4 billion, property damage in motor-vehicle accidents of $26.8 billion, property loss in fires of about $9.4 billion and certain "indirect" costs of work accidents of about $22.5 billion.

THE DEATH RATE per 100,000 population in 1989 was 38.1, down 3 per cent from the 1988 rate.

Present indications are that in 1989, as in earlier years, accidents were the fourth leading cause of death, exceeded only by heart disease, cancer, and stroke.

Accidents were the leading cause of death among all persons aged 1 to 37 according to the latest detailed information (1987).

	1989 Deaths	Change from 1988	Deaths per 100,000 Persons	Disabling Injuries[a]
ALL CLASSES[b]	94,500	-2%	38.1	9,000,000
Motor-vehicle	46,900	-4%	18.9	1,700,000
Public nonwork	42,800			1,500,000
Work	3,900			200,000
Home	200			(c)
Work	13,400	-4%	4.2	1,700,000
Nonmotor-vehicle	6,500			1,500,000
Motor-vehicle	3,900			200,000
Home	22,500	0%	9.1	3,400,000
Nonmotor-vehicle	22,300			3,400,000
Motor-vehicle	200			(c)
Public	19,000	+3%	7.7	2,400,000

Source: National Safety Council estimates.

[a]Disabling beyond the day of accident. The totals shown are the best estimates for the current year and should not be compared with totals for previous years.

[b]The totals for the four separate classes add to more than the all classes figure due to rounding and because the motor-vehicle totals include some deaths and injuries also included in the work and home totals. This duplication amounted to about 4,100 deaths and 200,000 injuries in 1989.

[c]Less than 10,000.

Accident Facts is published annually in two editions: The Condensed Edition lists a few outstanding facts and is issued twice yearly—in March and August. This edition gives the revised 1989 estimates. The Complete edition is a 112-page book, published in August, containing charts, tables, and an analysis of the data for all kinds of accidents, including work, motor-vehicle, home, public, and farm. Ordering information is located on the reverse of this page. For inquiries regarding the content of Accident Facts, write to the Statistics Department, National Safety Council, 444 N. Michigan Avenue, Chicago, Illinois 60611, or call 312-527-4800.

ORDER FORM
ACCIDENT FACTS, 1990 EDITION

Ordering Information REFERENCE NO. 1169

Product Number: 02170-0000
Specifications: Soft Cover, 112 pages, 6"× 9", 1990 Edition
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Terms: ONLY NATIONAL SAFETY COUNCIL MEMBERS ARE ENTITLED TO MEMBER PRICES. ADD $3 SERVICE, HANDLING AND SHIPPING CHARGE; FULL PAYMENT MUST ACCOMPANY ORDER.

Mail order form and check to: Technical Publications, National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. For additional information and quantity orders, call customer service at 1-800-621-7619 or 312-527-4800, ext. 6900.

Name

Organization

Address

City, State, Zip

Telephone 000061169

ACCIDENT[1] TYPES that were most important in 1989, and changes from 1988, were as follows:

Type	1989	1988	Change
Motor-vehicle	46,900	48,900	-4%
Falls	12,400	12,200	+2%
Poison (solid, liquid)	5,600	5,100	+10%
Drowning	4,600	4,600	0%
Fires, burns	4,400	4,700	-6%
Suffocation—ingestion	3,900	4,000	-3%
Firearms	1,600	1,500	+7%
Poison (gas, vapor)	900	900	0%

DEATH TOTALS BY AGE GROUP in 1989, and changes from 1988, were as follows:

Age	1989	1988	Change
0 to 4	4,000	4,100	-2%
5 to 14	4,100	4,200	-2%
15 to 24	16,000	18,000	-11%
25 to 44	28,300	28,300	0%
45 to 64	15,400	15,000	+3%
65 to 74	8,500	8,600	-1%
75 and over	18,200	18,300	-1%

MOTOR-VEHICLE ACCIDENTS

There were approximately 46,900 deaths from motor-vehicle accidents in 1989, a decrease of 4 per cent from 1988. Motor-vehicle mileage was up 3 per cent. The death rate per 100,000,000 vehicle miles was 2.25, a decrease of 7 per cent from 1988.

Disabling injuries in 1989 numbered about 1,700,000. Costs, including wage loss, medical expense, administrative and claim settlement costs of insurance, and property damage amounted to $72.2 billion.

WORK ACCIDENTS

The 1989 death total for work accidents was approximately 10,400, a 4 per cent decrease from 1988. Disabling injuries numbered 1,700,000. The death total excluding agriculture was about 9,100, of which 1,100 occurred in manufacturing industries.

Industry Division	1989 Deaths	1988-89 Change	1989 Rates[a]	1988-89 Change
ALL INDUSTRIES	10,400	-4%	9	0%
Agriculture[b]	1,300	-13%	40[c]	-17%
Mining, quarrying[b]	300	0%	43	+13%
Construction	2,100	-5%	32	-6%
Manufacturing	1,100	0%	6	0%
Transportation and public utilities	1,400	-7%	24	-8%
Trade[b]	1,100	0%	4	0%
Services[b]	1,500	0%	4	0%
Government	1,600	0%	9	0%

[a]Deaths per 100,000 workers in each division.
[b]Agriculture includes forestry and fishing. Mining and quarrying includes oil and gas extraction (preliminary MSHA report indicate 115 deaths in coal, metal and nonmetal mining in 1989). Trade includes wholesale and retail trade. Services includes finance, insurance, and real estate.
[c]Agriculture rate excludes deaths of persons under 14 years of age. Rates for other industry divisions do not require this adjustment. Deaths of persons under 14 are included in the agriculture death total.

Total cost, including loss from business fires, amounted to about $48.5 billion.

In addition to the 10,400 workers killed while at work 36,900 died from off-the-job accidents—a death total of 47,300. Workers injured in both kinds of accidents numbered about 4,500,000.

HOME ACCIDENTS

Home accident deaths in 1989 totaled approximately 22,500, no change from the 1988 total. Disabling injuries numbered 3,400,000. Costs—wage loss, medical expense, fire losses, administrative and claim settlement costs of insurance—were $18.2 billion.

PUBLIC ACCIDENTS

There were approximately 19,000 deaths in public nonmotor-vehicle accidents during 1989, an increase of 3 per cent from the 1988 total. Disabling injuries numbered approximately 2,400,000. Wage loss, medical expense, fire losses, administrative and claim settlement costs of insurance amounted to $12.5 billion.

Crash Cushion

The Guard Rail Energy Absorbing Terminal is a compact, portable crash cushion that protects motorists from potential hazards on roadways that are narrowed by construction.

The company says the system is ideal for sites such as portable concrete median barrier ends, bridge piers, temporary or permanent safety walls and light posts.

The system consists of crushable cartridges surrounded by a framework of triple-corrugated-steel guard rail. When hit head on, cartridges crush to absorb the energy of the impact, while the steel guard-rail side panels telescope. When hit from the side, the unit gently redirects the errant vehicle. — **Energy Absorption Systems Inc.,** One E. Wacker Dr., Chicago, IL 60601.

EMERGENCY STROBE

Flex-O-Lite has expanded its highway safety equipment line to include the new Emergency Strobe 180 (ES180). The high intensity strobe, which operates with a push-button switch, can be used on any terrain and in all weather conditions. The ES180 has its own carrying case and fits easily on the back seat of a compact car.

The emergency light is powered by a self-contained, six-volt battery that provides 42 flashes per minute for an average of 100 hours. The strobe is a safe alternative to emergency flares, according to the manufacturer. — **Flex-O-Lite,** 8301 Flex-O-Lite Dr., P.O. Box 4366, St. Louis, MO 63123.

EMERGENCY PHONE

A new cellular telephone, called the 68 EMS, is now available from Motorola for use by emergency medical service personnel. The phone is designed to transmit data from heart monitors at the scene of an emergency to a command post at a hospital. Physicians at the hospital can immediately confirm the patient's condition and specify course of treatment over the phone. The unit, which can also be used as a conventional cellular phone, is light and compact.

User-friendly features include speed dialing, last number redial, and hands-free, eyes-free operation to allow paramedics to focus attention on the patient. The phone has dual-system registration that allows for two phone numbers. —**Motorola Inc.,** General Systems Group, 1475 W. Shure Dr., Arlington Heights, IL 60004.

RAISED MARKERS

The 3M company has introduced a new reflective raised pavement marker claimed to be five times brighter than industry standards. The Series 280 Centerlite marker's reflective lens gives off high intensity light when illuminated by a vehicle's headlights, even under wet, nighttime conditions. The lens is imbedded within the marker to help maintain its brightness for the life of the marker.

The computer-designed base of the raised marker, which is highly resistant to impact from vehicles, alerts drivers with a "rumble" when driven over. The markers are available with white, yellow, blue or green bases and the lenses are availble in white, yellow, red, blue or green. Centerlite markers are recommended for use on asphalt or portland cement surfaces. — **3M,** P.O. Box 33600, St. Paul, MN 55133-3600.

DUST CONTROL

Liquid calcium chloride is an effective dust control agent for unpaved surfaces, according to Dow Chemicals. A new product, Liquidow, works over a wide range of temperatures, humidity, and traffic to keep dust from flying into the air when vehicles are driven over the surface.

The firm recommends the product be applied to unpaved roads during the spring after a rain, while moisture is still in the ground. Liquidow's ability to draw in moisture helps keep the improved surface damp and dust down. The product resists evaporation even on hot, dry days, according to the company. As the chemical slowly penetrates the unpaved surface for several inches, the road becomes compacted and stabilized over time. — **Dow Chemical U.S.A.,** Midland, MI 48674.

Mindless Mayhem

Accidents

"Mindless Mayhem On the Highways: How to Prevail in a Truck Collision Case," by R. G. Begam and E. G. Wolfe. *Trial*, 1050 31st St., N.W., Washington, DC 20007-4499. Vol. 26, No. 7, July 1990, pp. 68-72.

IIHS Facts, 1990. July 1990. Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, VA 22201. vpg.

Indiana Traffic Deaths, 1989. 1990. Indiana State Police, 301 State Office Bldg., Indianapolis, IN 46204. 28 pp.

Statistics of Road Traffic Accidents in Europe, 1980, 1985, 1986, 1987, 1988. 1990. United Nations, Unipub, 4611-F Assembly Dr., Lanham, MD 20706-4391. 80 pp.

Wyoming's Comprehensive Report on Traffic Accidents, 1989. 1990. Wyoming Highway Department, Highway Safety Branch, P.O. Box 1708, Cheyenne, WY 82002-9019. 184 pp.

"Accidents, Fatalities and Rates: Air Carriers and General Aviation, 1989 (Preliminary Data)." *NTSB News Digest*, National Transportation Safety Board, Washington, DC 20594. Vol. 9, No. 1-4, 1990, pp. 2-10.

Accident Reports

Tabulations of Accidents in the State of Texas, 1989. July 1990. Texas Transportation Institute, Accident Analysis Division, College Station, TX 77843-3135. 200 pp.

Alcohol

"California's Ongoing Battle Against DUI," by M. J. Hannigan. Police Chief, 13 Firstfield Rd., Gaithersburg, MD 20878. Vol. LVII, No. 7, July 1990, pp. 51-53.

"Drunk Driving Penalties: A State-by-State Report," by S. Nielsen. *Good Housekeeping*, P.O. Box 7189, Red Oak, IA 5159-0186. Vol. 211, No. 1, July 1990, pp. 186-187.

Bicycles

"And Your Town, Too," by J. Fremont and N. Pena. *Bicycling*, 33 E. Minor St., Emmaus, PA 18098. Vol. XXXI, No. 7, August 1990, pp. 38-42, 44.

"How the Bike Can Save L.A." by N. Pena and J. Fremont. *Bicycling*, 33 E Mintor St., Emmaus, PA 18098. Vol. XXXI, No. 7, August 1990, pp. 32-36.

Driver & Driving

Subjects Task Performances, Speed and Cognitive Load as a Function of Task Demands in Driving Simulation, by L. Harms. 1990. Swedish Road and Traffic Research Institute, S-581 01 Linkoping, Sweden. 38 pp.

Drugs

"Managing Drug Testing: Making the Burden Bearable," by P. Desmond. *Commercial Carrier Journal*, Chilton Way, Radnor, PA 19089. Vol. 146, No. 8, August 1990, pp. 40-46.

"Get Ready for Drug Testing," by T.M. Strah. *Transport Topics*, 2200 Mill Rd., Alexandria, VA 22314. No. 2868, 23 July 1990, pp. 21, 45.

Enforcement

The Giant Speed-Indicating Display in Police Traffic Control. 1990. Liikenneturva, Sitratie 7, 00420 Helsinki, Finland. 40 pp.

Handicapped

"Making Cities Safer for the Visually Impaired," by M. Tanaka. *The Wheel Extended*, Toyota Motor Corporation, Intl. Public Affairs Div., 4-18, Koraku 1-Chome, Bunkyo-ku, Tokyo, 112 Japan. Vol. 19, No. 4, 1990, pp. 24-32.

Highways

A Policy On Geometric Design of Highways and Streets. 1990. American Association of State Highway & Transportation Officials, Ste. 225, 444 N. Capitol St., N.W., Washington, DC 20001. 1088 pp.

"Effectiveness of Pavement Grooving in Accident Reduction," by S. Y. Wong. *ITE Journal*, 525 School St., N.W., Ste. 410, Washington, DC 20024. Vol. 60, No. 7, July 1990, pp. 34-37.

Hitchhiking

The Time Trap, Revised Edition, by A. Mackenzie. 1990. American Management Association, AMACOM Division, 135 West 50th St., New York 10020. 240 pp.

Motorcycles

Air Bags and Motorcycles: Are They Compatible? by M. P. Finnis. 1990. Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001. 21 pp.

Appropriate and Inappropriate Strategies for Injury Reduction in Motorcycle Accidents, by J. V. Ouellet. 1990. Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096-0001. 18 pp.

Research Into Motorcycle Conspicuity and Its Implementation. 1990. Society of Automotive Engineers, 400 Commonwealth Dr., Warrendale, PA 15096-0001. 17 pp.

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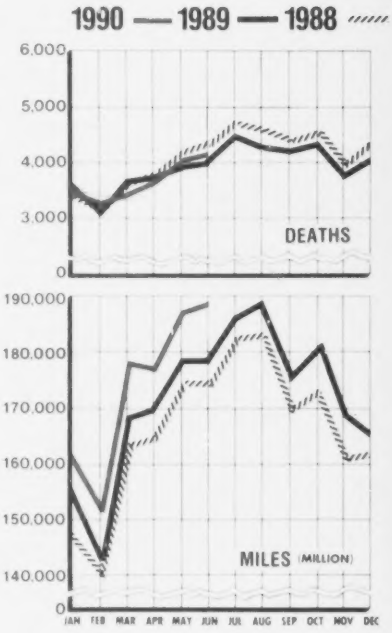
June Traffic Deaths Up 4%

BY MARY E. JOHNSTON and URSULA ZUEHLKE

TRAFFIC SUMMARY

Month	Deaths 1990	Deaths 1989	Change
June	4,150	3,980	+ 4%
6 months	22,000	21,890	+ 1%
12 months (Ending June, 1990)	47,010	48,380	– 3%



Motor-vehicle deaths in June totaled 4,150, an increase of 4 percent from the June 1989 total of 3,980.

Deaths for the six-month period ending June totaled 22,000, an increase of one percent from the 1989 six-month total of 21,890.

Disabling injuries for 1990 are estimated to be slightly more than 790,000. These are injuries resulting in disability beyond the day of the accident, and do not include minor injuries, which probably totaled as many more.

The cost of motor-vehicle accidents for 1990 is estimated to be about $32 billion.

Based on preliminary vehicle mileage reports for this year, the estimated annual mileage death rate is 2.3 (deaths per 100 million vehicle miles).

State Experience

Among the 48 states reporting June experience, 18 states and the District of Columbia had fewer deaths than in the preceding June, and 28 states showed increases in deaths. Two states showed no change in the number of fatalities. For the six-month period, 27 states and the District of Columbia showed decreases in the number of deaths, while 21 states showed increases.

New Hampshire	–29%
Vermont	–22%
Rhode Island	–21%
Wyoming	–17%
New Mexico	–14%
Massachusetts	–13%
Nebraska	–12%
Arkansas	–11%
Oregon	–10%
South Dakota	– 9%
Ohio	– 9%
Minnesota	– 8%
Maine	– 8%
West Virginia	– 8%
Louisiana	– 7%
Iowa	– 7%
New York	– 7%
Arizona	– 6%
Colorado	– 6%
North Carolina	– 6%
Michigan	– 5%
Idaho	– 5%
California	– 3%
Illinois	– 2%
Texas	– 2%
South Carolina	– 1%
Florida	– *%

State Traffic Deaths

Deaths are reported by state traffic authorities. All figures are preliminary. To ensure proper comparisons, 1988 and 1989 figures cover the same reporting period as those for 1990.

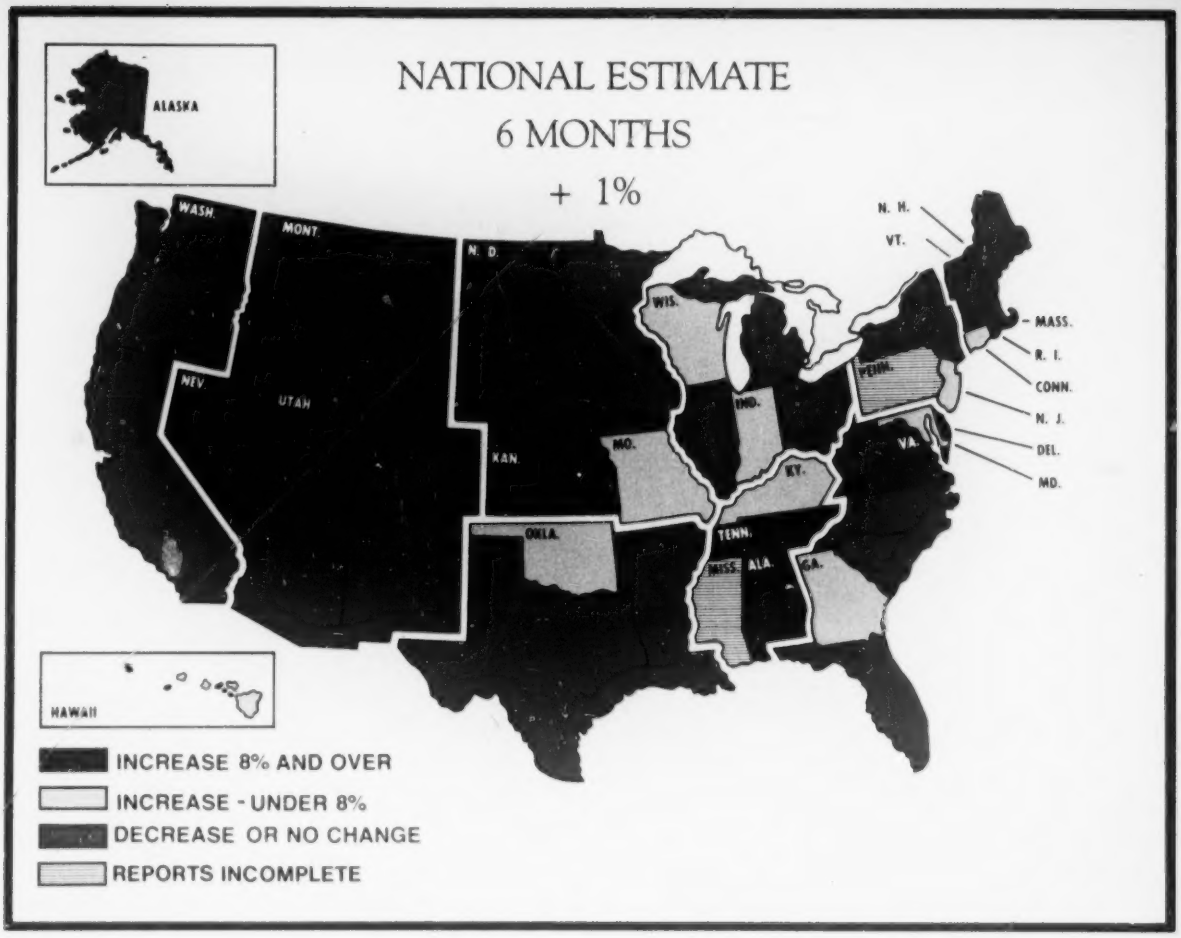
Population Rate: U.S. population rate and state population rates are the estimated annual number of deaths per 100,000 population. U.S. population rate is based on the July 1, 1990, population estimate; state population rates are based on July 1, 1989, population estimates, U.S. Bureau of the Census, Washington, D.C.

States shown in CAPS had fewer deaths in 1990 than they did in 1989 for the same reporting period.

Mileage Rate: The number of deaths per 100 million vehicle miles of travel.

STATE	NO. OF MOS.	DEATHS IDENTICAL PERIODS 1990	1989	1988	PERCENT CHANGES 1989 TO 1990	1988 TO 1990	1990 POP. RATE	1990 MILE. RATE
Total U.S.	**6**	**22,000**	**21,890**	**22,410**	**+ 1%**	**– 2%**	**18.8**	**2.3**
Alabama	6	507	471	473	+ 8%	+ 7%	24.6	2.3
Alaska	6	38	34	29	+ 12%	+ 31%	14.4	2.2
ARIZONA	6	385	408	390	– 6%	– 1%	21.7	2.3
ARKANSAS	6	254	286	260	– 11%	– 2%	21.1	2.6
CALIFORNIA	6	2,279	2,355	2,257	– 3%	+ 1%	15.7	1.8
COLORADO	6	214	228	235	– 6%	– 9%	12.9	1.6
Connecticut	6	179	178	209	+ 1%	– 14%	11.1	1.4
Delaware	6	67	44	84	+ 52%	– 20%	19.9	2.0
D. OF C.	6	20	45	29	– 56%	– 31%	6.6	1.2
FLORIDA	6	1,552	1,559	1,514	– *%	+ 3%	24.5	2.9
Georgia	6	750	725	751	+ 3%	– *%	23.3	2.3
Hawaii	6	74	71	71	+ 4%	+ 4%	13.3	1.8
IDAHO	6	90	95	106	– 5%	– 15%	17.8	2.1
ILLINOIS	6	730	742	784	– 2%	– 7%	12.5	1.9
Indiana	6	457	443	491	+ 3%	– 7%	16.3	1.8
IOWA	6	203	219	237	– 7%	– 14%	14.3	1.8
Kansas	6	232	179	218	+ 30%	+ 6%	18.5	2.3
Kentucky	6	391	371	398	+ 5%	– 2%	21.0	2.4
LOUISIANA	6	347	375	402	– 7%	– 14%	15.8	1.9
MAINE	6	86	93	113	– 8%	– 24%	14.1	1.5
Maryland	6	345	324	365	+ 6%	– 5%	14.7	1.8
MASSACHUSETTS	6	274	316	297	– 13%	– 8%	9.3	1.3
MICHIGAN	6	671	708	727	– 5%	– 8%	14.5	1.7
MINNESOTA	6	213	232	253	– 8%	– 16%	9.8	1.1
Mississippi	4	212	221	204	– 4%	+ 4%	24.3	2.9
Missouri	6	499	488	502	+ 2%	– 1%	19.3	2.1
Montana	6	91	66	89	+ 38%	+ 2%	22.6	2.3
NEBRASKA	6	106	120	121	– 12%	– 12%	13.2	1.6
Nevada	6	155	121	118	+ 28%	+ 31%	27.9	3.2
NEW HAMPSHIRE	6	70	99	78	– 29%	– 10%	12.6	1.5
New Jersey	6	429	415	472	+ 3%	– 9%	11.1	1.4
NEW MEXICO	6	212	247	206	– 14%	+ 3%	27.7	2.7
NEW YORK	6	917	986	873	– 7%	+ 5%	10.2	1.7
NORTH CAROLINA	6	625	666	675	– 6%	– 7%	19.0	2.2
North Dakota	6	45	31	45	+ 45%	0%	13.6	1.6
OHIO	6	651	719	727	– 9%	– 10%	11.9	1.6
Oklahoma	6	305	285	299	+ 7%	+ 2%	18.9	1.9
OREGON	6	252	279	283	– 10%	– 11%	17.9	2.0
Pennsylvania	4	507	528	539	– 4%	– 6%	12.6	1.9
RHODE ISLAND	6	42	53	59	– 21%	– 29%	8.4	1.5
SOUTH CAROLINA	6	498	501	488	– 1%	+ 2%	28.4	3.3
SOUTH DAKOTA	6	59	65	61	– 9%	– 3%	16.5	1.8
Tennessee	6	553	512	575	+ 8%	– 4%	22.4	2.3
TEXAS	6	1,519	1,543	1,519	– 2%	0%	17.9	2.0
Utah	6	126	117	132	+ 8%	– 5%	14.8	2.0
VERMONT	6	40	51	50	– 22%	– 20%	14.1	1.4
Virginia	6	531	445	469	+ 19%	+ 13%	17.4	1.8
Washington	6	385	321	343	+ 20%	+ 12%	16.2	1.7
WEST VIRGINIA	6	202	220	220	– 8%	– 8%	21.8	2.8
Wisconsin	6	337	336	345	+ *%	– 2%	13.8	1.6
WYOMING	6	48	58	58	– 17%	– 17%	20.2	1.8
Puerto Rico[1]	2	86	103	114	– 17%	– 25%	18.9	—
Virgin Islands[1]	6	13	6	9	+117%	+ 44%	46.8	—
— CANADIAN PROVINCES —								
Alberta	6	182	177	180	+ 3%	+ 1%	23.0	—
British Columbia	6	279	245	270	+ 14%	+ 3%	26.4	—

[1]Not included in the TOTAL U.S. death count or rates.
*Less than 0.5%.



MOTOR-VEHICLE DEATHS AND CHANGES TOTAL U.S.

	Deaths				Percentage Changes				
					Corresponding Month			4 Months Moving Avg. +	
Months	1987	1988	1989	1990	1988-1990	1988-1989	1989-1990	1988-1989	1989-1990
January	3,301	3,390	3,540	3,480	+ 3%		- 2%		- 5%
February	2,997	3,130	3,090	3,290	+ 5%		+ 6%		- 3%
March	3,517	3,600	3,660	3,440	- 4%		- 6%		- 3%
April	3,621	3,760	3,720	3,620	- 4%		- 3%		- 1%
May	4,264	4,210	3,900	4,020	- 5%		+ 3%		0%
June	4,279	4,320	3,980	4,150	- 4%		+ 4%		- *%
6 Months	21,979	22,410	21,890	22,000	- 2%		+ 1%		
July	4,472	4,720	4,460			- 6%		- 6%	
August	4,815	4,550	4,250			- 7%		- 7%	
September	4,300	4,370	4,190			- 4%		- 6%	
October	4,535	4,520	4,310			- 5%		- 5%	
November	4,169	3,980	3,770			- 5%		- 5%	
December	4,020	4,350	4,030			- 7%		- 5%	
TOTAL	48,290	48,900	46,900	47,010 ‡		- 4%			

The 1987 figures are from the National Center for Health Statistics. The 1988, 1989 and 1990 figures are National Safety Council estimates.

+ Four Month Moving Average is based on changes between the totals for four months instead of one month. For example, the June figure shows the change between the totals for March 1989 - June 1989 and March 1990 - June 1990, etc. Adding several months together tends to smooth out single-month changes which may be affected by differences in the number of weekends in a month from one year to the next, random variations, etc.

‡ Deaths for the 12-month period ending June 1990.

*Less than 0.5%.

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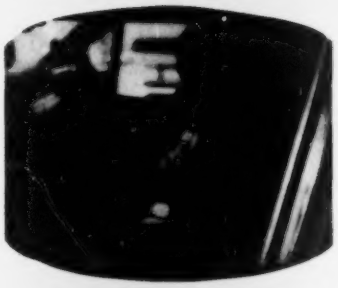

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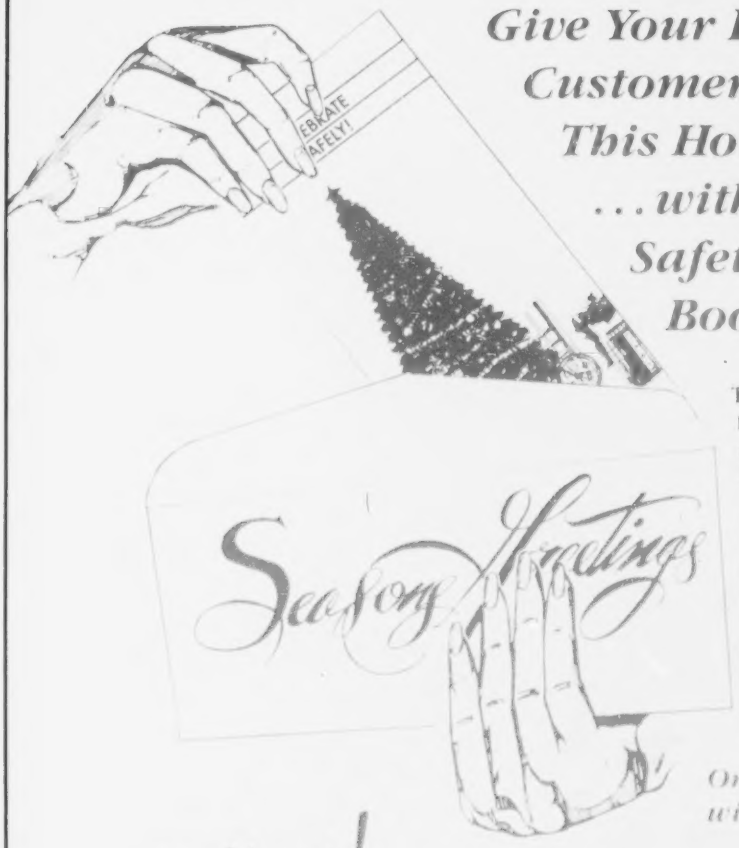

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